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MEDICAL SCIENCES.

EDITED BY

I. MINIS HAYS, A.M., M.D.

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VOL. LXXIX.

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CONTENTS

OF

THE AMERICAN JOURNAL

OF

THE MEDICAL SCIENCES.

NO. CLVII. NEW SERIES.

JANUARY, 1879.

ORIGINAL COMMUNICATIONS.

MEMOIRS AND CASES.

ART. PAGE

I. On Affections of the Ear arising from Diseases of the Teeth. By Samuel Sexton, M.D., Surgeon to the New York Ear Dispensary, Aural Surgeon to the New York Eye and Ear Infirmary. 17

II. Typho-Malarial Fever, the so-called "Mountain" Fever of the Rocky Mountain Region. By John Van Rensselaer Hoff, A.M., M.D., Assistant Surgeon U. S. Army. 38

III. On a New Method of Treating Chronic Nasal Catarrh. By Harrison Allen, M.D., Professor of Physiology in the University of Pennsylvania. 60

IV. Abnormal Adhesion of Funis to Placenta, with Accidental Hemorrhage and Abortion. By Alex. Y. P. Garnett, M.D., Emeritus Professor of Clinical Medicine in the National Medical College of the District of Columbia. 73

V. Subcarbonate of Iron as an Antidote in Arsenical Poisoning, with four Illustrative Cases of Recovery. By Charles A. Leale, M.D., of New York. 80

VI. An Experimental Inquiry into the Value of the Carbolic Spray as a Preventive of Putrefaction. By Lewis A. Stimson, M.D., Surgeon to the Presbyterian and Bellevue Hospitals, and Professor of Pathological Anatomy in the Medical Faculty of the University of the City of New York. . 83

VII. Chloral Hydrate and Camphor in Toxic and Therapeutic Doses. By D. B. Simmons, M.D., Surgeon to, and Director of, Ken Hospital, Yokohama, Japan. 89

VIII. On Fractures of the Cranial Bones. By John A. Lidell, A.M., M.D., of New York, late Surgeon to Bellevue Hospital, Inspector of the Medical and Hospital Department of the Army of the Potomac, etc. etc. 91

IX. Fatal Intestinal Obstruction by Gall-Stones. By Frank Woodbury, M.D., Physician to the German Hospital, Philadelphia. 124

X. On Litholapaxy. By Robert F. Weir, M.D., Surgeon to the New York and Roosevelt Hospitals, Lecturer on Genito-Urinary Diseases at the College of Physicians and Surgeons, New York. 130

XI. A Case of Inverted Womb, with supposed Malignant Disease of its Fundus; its Easy Reposition and Removal of Old Placental(?) Tissue; Perfect Recovery of the Patient. By Walter F. Atlee, M.D., of Philadelphia. 139

ART. PAGE
XII. A Case of Reproduction of the Membrana Tympani. By S. O. Richey, M.D., of Washington, D. C. 144
XIII. A Case of Croupous Bronchitis; Recovery under Treatment. By Thomas H. Streets, M.D., P.A. Surgeon, U. S. N. Hospital, Yokohama, Japan. 148
XIV. Iritis Spongiosa (Fibrinosa). By Swan M. Burnett, M.D., Surgeon in charge of the Ophthalmic Division of the Central Dispensary, Washington, D. C. 153
XV. Cyanosis. Congenital Abnormality of the Heart. Two Cases. One Autopsy. By Samuel C. Busey, M.D., Professor of the Theory and Practice of Medicine, Medical Department of the University of Georgetown, and one of the Attending Physicians to the Children's Hospital, Washington, D. C. 159
XVI. Neuroma involving the Ulnar Nerve; Excision with Entire Relief from Pain. By Wm. M. Findley, M.D., of Altoona, Pa. . . . 161

REVIEWS.

XVII. The Medical and Surgical History of the War of the Rebellion. Part II. Volume I. Medical History. Being the second medical volume. Prepared under the direction of Joseph K. Barnes, Surgeon-General United States Army. By Joseph Janvier Woodward, Surgeon, United States Army. First issue. 4to. pp. 869. Washington: Government Printing Office, 1879. 163
XVIII. A Treatise on Hygiene and Public Health. Edited by Albert H. Buck, M.D., American Editor of Ziemssen's Cyclopædia of the Practice of Medicine, etc. 2 vols. 8vo., pp. viii. 792, vii. 657. New York: William Wood & Co., 1879. 180
XIX. Chirurgie Oculaire. Par L. de Wecker. Leçons recueillies et rédigées par le Dr. Masselon. pp. 419. Paris, 1879.
Surgery of the Eye. By L. de Wecker. 186
XX. The Pathology and Treatment of Venereal Diseases. By Freeman J. Bumstead, M.D., LL.D., late Professor of Venereal Diseases at the College of Physicians and Surgeons, New York, etc. etc. Fourth edition, revised, enlarged, and in great part rewritten by the author and by Robert W. Taylor, A.M., M.D., Professor of Skin Diseases in the University of Vermont, Attending Surgeon to Charity Hospital, etc. etc. With one hundred and thirty-eight wood-cuts. 8vo. pp. 835. Philadelphia: Henry C. Lea, 1879. 193
XXI. Clinical Medicine: A Systematic Treatise on the Diagnosis and Treatment of Diseases. Designed for the Use of Students and Practitioners of Medicine. By Austin Flint, M.D., Professor of the Principles and Practice of Medicine, and of Clinical Medicine in the Bellevue Medical College, etc. etc. 8vo. pp. 795. Philadelphia: Henry C. Lea, 1879. . . 199
XXII. Manual of the Principles and Practice of Operative Surgery. By Stephen Smith, A.M., M.D., Surgeon to Bellevue and St. Vincent Hospitals, New York. 12mo. pp. 690. Boston: Houghton, Osgood & Co., 1879. 201
XXIII. A System of Medicine. Edited by J. Russell Reynolds, M.D., F.R.S., Professor of the Principles and Practice of Medicine in University College, London, etc. etc. With numerous additional illustrations. By Henry Hartshorne, A.M., M.D., lately Professor of Hygiene in University of Penna., etc. In three volumes. Vol. I. General Diseases and Diseases of the Nervous System. Royal 8vo. pp. 1127. Philadelphia: Henry C. Lea, 1879. 204
XXIV. Injuries and Diseases of the Lymphatic System. By S. Messenger Bradley, F.R.C.S., Surgeon to the Manchester Royal Infirmary, etc. 8vo. pp. viii., 144. London: J. & A. Churchill, 1879. . . . 205

ART. PAGE

XXV. Glaucoma: its Causes, Symptoms, Pathology, and Treatment. By Priestley Smith, Ophthalmic Surgeon to the Queen's Hospital, Birmingham. With lithographic plates. 8vo. pp. xv., 281. London: J. & A. Churchill, 1879. 206

XXVI. Hygienic and Medical Reports. By Medical Officers of the U. S. Navy. Prepared for publication under the direction of Surgeon-General of the Navy. By Joseph B. Parker, A.M., M.D., Surgeon U. S. Navy; Assistant to the Bureau of Medicine and Surgery. 8vo. pp. viii., 1079. Government Printing Office: Washington, 1879. 211

XXVII. Lectures on Diseases of the Nervous System. Delivered at Guy's Hospital. By Samuel Wilks, M.D., F.R.S., 8vo. pp. viii., 472. Philadelphia: Lindsay & Blakiston, 1879. 214

XXVIII. Transactions of State Medical Societies.

1. Transactions of the Medical Society of the State of New York for the year 1879. 8vo. pp. 703. Syracuse, 1879.
2. Transactions of the South Carolina Medical Association, April, 1879, pp. xxxix. 85. Charleston, 1879.
3. Transactions of the State Medical Society of Kansas, May, 1879, pp. 117. Lawrence, 1879.
4. Transactions of the Medical Society of New Jersey, May, 1879, pp. 336. Newark, 1879.
5. Transactions of the Medical Association of Georgia, April, 1879, pp. 221. Atlanta, 1879.
6. Transactions of the Rhode Island Medical Society for the years 1878–9, vol. ii. part second.
7. Transactions of the Connecticut Medical Society, 1879, pp. 214.
8. Transactions of the Arkansas State Medical Society, 1879, pp. 98. . 215

XXIX. Observations on Contraction of the Fingers (Dupuytren's Contraction) and its successful treatment by Subcutaneous Divisions of the Palmar Fascia, and Immediate Extension. Also on the Obliteration of Depressed Cicatrices after Glandular Abscesses of Exfoliation of Bone by a Subcutaneous Operation. By William Adams. F.R C.S., Surgeon to the Great Northern Hospital, etc. 8vo. pp. 80. London: J. & A. Churchill, 1879. 219

XXX. Photographic Illustrations of Skin Diseases. By George Henry Fox, A.M., M.D., Clinical Professor of Dermatology, Starling Medical College, Columbus, Ohio. Parts 1, 2, 3, 4. New York: E. B. Treat, 1879. . 220

XXXI. A Manual and Atlas of Medical Ophthalmoscopy. By W. R. Gowers, M.D., F.R.C.P., Assistant Professor of Clinical Medicine in University Coll., etc. 8vo. pp. xii., 352. London: J. & A. Churchill, 1879. 221

XXXII. Statistics of Placenta Prævia collected from the practice of the Physicians in the State of Indiana. By Enoch W. King, M.D., Galena, Ind. 8vo. pp. 50. 1879. 224

XXXIII. Recent Works on Surgical Diagnosis.

1. A Practical Treatise on Surgical Diagnosis, designed as a Manual for Practitioners and Students. By Ambrose L. Ranney, A.M., M.D., Assist. Prof. of Anatomy in Univ. of New York. 8vo. pp. xii., 386. New York: William Wood & Co., 1879.
2. A Guide to Surgical Diagnosis. By Christopher Heath, F.R.C.S., Professor of Clinical Surgery in University College, London, and Surgeon to University College Hospital. 12mo. pp. xii., 214. Philadelphia: Lindsay & Blakiston, 1879. 225

XXXIV. The Heart and its Diseases, with their Treatment, including the Gouty Heart. By J. Milner Fothergill, M.D., M.R.C.P. Lond., Assistant Phys. to West London Hospital for Diseases of Chest (Victoria Park): Associate Fellow of College of Physicians of Philada. Second edition (entirely rewritten). With illustrations. 8vo. pp. xvi., 476. Philadelphia: Lindsay & Blakiston, 1879. 227

ART. PAGE

XXXV. The National Dispensatory; containing the Natural History, Chemistry, Pharmacy, Actions and Uses of Medicine. Including those recognized in the Pharmacopœias of the United States, Great Britain, and Germany, with numerous references to the French Codex. By Alfred Stillé, M.D., LL.D., Professor of Medicine in the University of Pennsylvania, and John M. Maisch, Pharm. D., Professor of Materia Medica and Botany in Philadelphia College of Pharmacy. Second edition, thoroughly revised, with numerous additions. 8vo. pp. xi., 1680. Philadelphia, Henry C. Lea, 1879. 230

XXXVI. Vorlesungen über neuere Behandlungsweisen der Syphilis. Von Dr. Carl Sigmund, Ritter von Ilanor, etc. Zweite vielfach vermehrte Auflage. 8vo. pp. 160. Wien, 1880.
Lectures upon the Modern Treatment of Syphilis. By Dr. Carl Sigmund, Knight of Ilanor, etc. Second enlarged edition. 231

XXXVII. Physiological Therapeutics: A New Theory. By Thomas W. Poole, M.D., M.C.P.S. Ont. 8vo. pp. viii., 220. Toronto: The Toronto News Company, 1879. 234

XXXVIII. Guide to the Examination of Urine, with special reference to the Diseases of the Urinary Apparatus. By K. B. Hofmann, Professor at the University of Gratz, and R. Ultzmann, Docent at the University of Vienna. From the second edition. Translated and edited by F. Forchheimer, M.D., Professor of Medical Chemistry at the Medical College of Ohio, Cincinnati. With illustrations. 8vo. pp. 195. Cincinnati: Peter G. Thomson, 1879.
The same. Translated by T. Barton Brune, A.M., M.D., Resident Physician Maryland University Hospital, and H. Holbrook Curtis, Ph.B. 8vo. pp. 269. New York: D. Appleton & Co., 1879. 236

XXXIX. A System of Midwifery, including the Diseases of Pregnancy and the Puerperal State. By William Leishman, M.D., Regius Professor of Midwifery in the University of Glasgow, etc. etc. Third American edition, revised by the author. With additions by John S. Parry, M.D. With 200 illustrations. 8vo. pp. 732. Philadelphia: Henry C. Lea, 1879. 237

XL. Eyeball-Tension; its Effects on the Sight and its Treatment. By W. Spencer Watson, F.R.C.S. Eng., Senior Surgeon to the Royal South London Ophthalmic Hospital, etc. 8vo. pp. 70. London: H. K. Lewis, 1879. 238

XLI. Spermatorrhœa: Its Causes, Symptoms, Results, and Treatment. By Roberts Bartholow, A.M., M.D., Professor of the Theory and Practice of Medicine in the Medical College of Ohio, etc. Fourth edition, revised. 8vo. pp. viii., 128. New York: William Wood & Co., 1879. . . 240

XLII. Drei Fälle von Pneumopericardie. Von Dr. Herman Müller, Privatdocent und Secundararzt der med. Klinik in Zurich. Deutsches Archiv für Klinische Medicin. Bd. xxiv. Heft. 2. Ss. 158–174. Leipzig, 1879.
Three Cases of Pneumopericardium. By Dr. Herman Müller. . . 241

XLIII. Holden's Manual of the Dissection of the Human Body. Edited by Luther Holden, President of the Royal College of Surgeons, etc., and John Langton, F.R.C.S., Assistant-Surgeon and Lecturer on Anatomy at St. Bartholomew's Hospital. Illustrated with numerous wood engravings. Fourth edition. 8vo. pp. 692. Philadelphia: Lindsay & Blakiston, 1879. 246

XLIV. Health Primers. 16mo. New York: D. Appleton & Co., 1879.
1. Exercise and Training. By C. H. Ralfe, M.D. Pp. 96.
2. Alcohol; its Use and Abuse. By W. S. Greenfield, M.D. Pp. 95.
3. The House and its Surroundings. Pp. 96.
4. Premature Death; its Promotion or Prevention. Pp. 94. . . 247

XLV. Clinical Remarks on Gleet, its Causes and Treatment. By J. C. Ogilvie Will, M.D., Surgeon to the Aberdeen Royal Infirmary, etc. 8vo. pp. 31. London: J. & A. Churchill, 1879. 248

ART. PAGE

XLVI. Diseases of Women. By Lawson Tait, F.R.C.S., Surgeon to Birmingham Hospital for Women; Fellow of the Obstetrical Societies of London, Dublin, and Edinburgh, etc. etc. Second edition. 8vo. pp. 192. New York: Wm. Wood & Co., 1879. 249

XLVII. A Text-Book of Physiology. By M. Foster, M.A., M.D., F.R.S., Prælector in Physiology and Fellow of Trinity College, Cambridge. Third Edition, Revised. 8vo. pp. 720. London: Macmillan & Co., 1879. . 249

XLVIII. Memorial Oration in Honour of Ephraim McDowell "The Father of Ovariotomy." By Samuel D. Gross, M.D., LL.D., D.C.L. Oxon. Delivered at Danville, Ky., May 14, 1879. 8vo. pp. 77. Louisville: John P. Morton & Co., 1879. 251

XLIX. A Treatise on the Theory and Practice of Medicine. By John Syer Bristowe, M.D. Lond., Physician to and Joint Lecturer on Medicine at St. Thomas's Hospital. Second American Edition revised by the Author. With Notes and Additions, by James H. Hutchinson, M.D. 8vo. pp. 1081. Philadelphia: Henry C. Lea, 1879.

The Theory and Practice of Medicine. By Frederick T. Roberts, M.D., B.Sc., F.R.C.P., Prof. of Materia Medica and Therapeutics at University Coll., etc. Third American, from the Fourth London Edition. 8vo. pp. 1041. Philadelphia: Lindsay & Blakiston, 1879.. . . 252

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES IN THE MEDICAL SCIENCES.

Anatomy and Physiology.

PAGE

Communication between the Aorta and Pulmonary Artery. By Dr. B. Baginsky. 253

On the Development of the Coloured Blood-Corpuscles. By Prof. Hayem. 254

Materia Medica and Therapeutics.

On Benzoate of Soda. By Dr. Ulhmann. 254

The Physiological Action and Therapeutic Value of Sclerotic Acid. By Nikitin. 255

On Rectal Alimentation. By Prof. Brown-Séquard. . . . 256

Medicine.

Exact Period of Commencing the General Treatment of Syphilis. By Prof. Sigmund. . . . 257

Asphyxia caused by the Ascaris Lumbricoides. By Dr. C. Fürst. 258

On the Etiology of Tabes Dorsalis. By Berger. 259

On the Etiology of Sensitive Neurosis in the Region of the Median Nerve. By Herr Fragstein. . 259

On Hemiglossitis. By Dr. Noel Gueneau de Mussy. . . . 260

On the Effects of Benzoate of Soda in Diphtheria. By Gnündinger. 260

PAGE
The Local Treatment of Putrid Expectoration. 261
Purulent Diaphragmatic Pleurisy. By Dr. Noel Gueneau de Mussy. 263
Case of Interrupted Respiration, due to the Movements of the Heart. By Lereboullet. . . 264
Heart Diseases Associated with Scarlatina and Measles. By Dr. Arthur Ernest Sansom. . . 265
Phlegmonous Gastritis. By Drs. Glax and Lewandowsky. . . 266
Renal Inadequacy. By Dr. Andrew Clark. 267
On Salicylate of Soda for Urticaria. By Pietrzycki. . . . 268

SURGERY.

Traumatic Aneurism of the Scalp. By Dr. W. J. Tyson. . . 269
Trephining for Traumatic Epilepsy. By Mr. James F. West, Dr. Althaus, Mr. Bellamy, Mr. Adams, Mr. Hutchinson, Mr. Gay, Mr. Holmes, Mr. Durham, Mr. Bryant, and Dr. Douglas Powell. . 269
Cholecystotomy for Dropsy of the Gall-Bladder due to the Impaction of Gall-Stone. By Mr. Lawson Tait, Dr. Coupland, Mr. Hulke, Mr. Morris, Mr. Spencer Wells, and Mr. Barker. . . 273
A Case of Uretro-Uterine Fistula cured by Extirpation of a Kidney. By Zweifel. 275
Tubercle of the Urinary Organs. By Dr. Tapret. . . . 276
Litholapaxy, with the Report of a Fatal Case. By Dr. E. L. Keyes. 277
On the Treatment of Fractures. By Dr. Max Schüller. . . . 277
Treatment of Fracture of the Patella by Opening the Joint and Wiring the Fragments. By Mr. Rose, Mr. Adams, Mr. Bryant, and Mr. Lister. 278

OPHTHALMOLOGY AND OTOLOGY.

On Sclerotomy in Different Forms of Glaucoma. By Dr. De Wecker. . 280

MIDWIFERY AND GYNÆCOLOGY.

On a Case of Quintuplets. By Dr. Volkmann. 281
Difficult Labour from Distension of Fœtal Bladder. By Prof. Comelli. 281
On Utero-ovarian Cæsarean Amputation. By Dr. Mangiagalli. . 282
Successful Case of Gastrotomy in Extra-Uterine Pregnancy. By Mr. Lawson Tait, Mr. Doran, Mr. Knowsley Thornton, Mr. Spencer Wells, and Dr. Matthews Duncan. 283
On Intra-uterine Therapeutics in the Puerperal State. By Prof. Grüenwaldt. 285
Spontaneous Expulsion of a Fibromyoma. By Dr. Eggel. . . 286
On Castration of Women. By Dr. A. Schucking. 286

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

Fungus Poisoning and its Treatment. 287

THE
AMERICAN JOURNAL
OF THE MEDICAL SCIENCES

FOR JANUARY 1880.

ARTICLE I.

ON AFFECTIONS OF THE EAR ARISING FROM DISEASES OF THE TEETH.[1] By SAMUEL SEXTON, M.D., Surgeon to the New York Ear Dispensary, Aural Surgeon to the New York Eye and Ear Infirmary.

SOME time ago the writer was so much impressed with the frequent coexistence of aural and dental diseases in many of the patients who came to him with the former affection, that he resolved to assume the task of recording the results of any subsequent observations on the subject.

A carious tooth, that seemed to arrest the favourable progress of an *acute otitis media purulenta*, was the means of first attracting my attention specially to the teeth as bearing a more important relation to aural diseases than I had previously supposed; and although the thought was not entirely new to me, nor yet original, the impression thus made by a single striking case was the occasion, subsequently, of more thorough examinations of the mouth in all cases being made.

On now reviewing the records that I have since kept of some fifteen hundred cases, I find that the teeth are more frequently the seat of disease than was at first suspected, for of these fifteen hundred aural cases, perhaps one-third owe their origin or continuance, in a greater or less degree, to diseases of the teeth. In searching the literature bearing on this subject, it is not surprising to find that the earlier writers who contributed to the otology of their day, failed to attach much, if any, importance to the sympathetic relations between the teeth and ears, although Ambrose Paré (1628), who devoted, comparatively, a great deal of space in his work to the parts under consideration, especially to the teeth, found that in toothache the pain was soothed by applying a mixture of opium, castor, and the oil of roses, to the ear. This author, to obtain relief in these cases, frequently resorted to opening a vein behind the ears, or to the application of a small plaster composed of pitch and mastich to the "artery of the temple" on the side where the pain existed. The language indicates that the connection thought to exist was other than nervous. Du Verney (1683), author of the first treatise devoted to the ear, was not aware of the sympathetic nervous connection between the teeth and ears.

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[1] A Prize Essay, for which the Medical Society of the County of New York awarded a gold medal, Oct. 27, 1879.

"The society does not consider itself as approving the doctrines contained in any of the essays to which the prize may be adjudged."

The otology of the fathers, indeed, did not include a knowledge of a nervous relationship; and even at the beginning of the present century the writings of Saunders, Saissy, and others, allude to diseases of the teeth as affecting the ears in a manner most meagre, although anomalies of the throat were spoken of as causing deafness: principally, however, as offering a mechanical obstruction to the faucial openings of the Eustachian tubes. Even Toynbee, Wilde, Triquet, and their contemporaries, failed to contribute to the knowledge of this subject in any material manner. The important work of clearing up this subject was left to the otologists of the present day, and in turning to our principal writers, we find the nervous relationship of the teeth and ears clearly recognized.

The more recent works, especially of Woakes and Cooper, give considerable space to this subject. Regarding the physiology of the nervous relationship, the treatise of Dr. Woakes more clearly establishes it than has hitherto been done.

Since physiological research has drawn attention to the fact that vasomotor relations create instantaneous communication between parts widely separated—as between the teeth and the ears—we are enabled to make a more satisfactory diagnosis, especially as to etiology, in aural disease, and to establish a more rational system of therapeutics.

Treatment, based on the belief that the ear is nearly always invaded by disease extending from the throat *per* the Eustachian tubes, will, it is believed, give place to more successful methods, because founded on a more rational pathology.

The phenomena whereby affections of the teeth excite diseased action in the ears, cannot be better explained than by a reference to the formula of Dr. Woakes; it reads:—

> "The only obvious connecting link between the regions interested, is the continuity of nerve-fibre. The simple continuity of sensori-motor nerves is insufficient to produce the conditions under review, we must seek yet farther for the true medium by which they are brought about. This will be found in the relations of the vaso-motor nerves, and the functions which it is their office to fulfil."

He believes that nearly all sensori-motor nerves comprise fibres belonging to the vaso-motor system, and that these fibres run in a contrary direction to the cerebro-spinal nerve with which they are associated.

> "Thus, in speaking of a cerebro-spinal nerve, say the vagus, we describe it as pursuing a course *from* the medulla to the respiratory organs, and the several viscera which it supplies. At the same time it must be remembered that it contains other febrillæ in its sheath running *from* the viscera towards the nerve centres, some of which at intervals leave the sheath and enter a ganglion of the sympathetic, in their course to the general vaso-motor centre, situated in the medulla oblongata, at a point which has scarcely been determined for the human subject, though it has been accurately fixed in the rabbit. These fibres are then centripetal or afferent in their function, conveying impressions from the tissues to the sub-centres constituted by the ganglion, or to the general vaso-motor centre."

These fibres communicate with the caudate cells of the ganglion they enter, and they are thus brought into communication with remote parts through other nerves coming to the same ganglion. Nerves leading from the ganglion to the spinal cord follow its anterior columns, passing upwards to the primary vaso-motor centre. The same course is pursued by the fibres of this system from the general centre *downwards* along the anterior columns of the cord, and leaving it when opposite an inter-vertebral foramen, they join a ganglion of the sympathetic, and "after similarly mingling with the caudate cells, quit it to seek their several destinations on the coats of the arteries whose calibres they regulate. Further, it is to be noted that by the automatic action of the *general* vaso-motor centre, the normal calibre or tone of the vessels is maintained." The author quoted, believes that the sympathetic ganglia play the part of sub-centres, acting independently of the general centre, and "that they are also *correlating organs* by means of which afferent tissue impressions from one direction are reflexly referred to a totally different tract."

The action of the vaso-motor nerves on the arteries, will be better understood by bearing in mind that the middle coat of all arteries contains circularly-disposed plain muscular fibres; as the arteries become smaller, the muscular element becomes more and more prominent as compared with the elastic element, until, in the minute arteries, the middle coat consists entirely of a series of plain muscular fibres wrapped around the elastic internal coat. (M. Foster.)

Now whether the vaso-motor mechanisms depend entirely for their action on the sympathetic system or not, and whatever may finally be regarded as their modus operandi, it is known that—

> "The tone of any given vascular area may be altered, positively in the direction of augmentation (constriction), or negatively in the way of inhibition (dilation), quite independently of what is going on in other areas. The changes may be brought about by (1) stimuli applied to the spot itself, and acting either directly on the local mechanism, or indirectly by reflex action through the general vaso-motor centre; (2) by stimuli applied to some other sentient surfaces, and acting by reflex action through the general vaso-motor centre; (3) by stimuli (chemical, blood stimuli), acting directly on the general vaso-motor centre." (M. Foster.)

The changes in the capillary districts are passive in their nature as they (the capillaries) do not possess muscular texture. Their calibre is enlarged when the supply of arterial blood sent to them is increased, and when the quantity is less they are sufficiently elastic to accommodate themselves to the change. The tone of the arteries is maintained through vaso-motor influence, and an example of its withdrawal is seen in flushing, which is due to a loss of tone. During relaxation of the vessels more blood flows into them, and there is an increase of temperature. A diminution in the size of the vessels occasions a flow of blood from the part, and temperature falls.

> "Nerve fibres belonging to the sympathetic system are distributed largely to the bloodvessels, but their terminations have not as yet been clearly made out. By galvanic or mechanical stimulation, this muscular coat may in the living artery be made to contract. During this contraction which has the slow character belonging to contractions of all plain muscle, the calibre of the vessel is diminished. During relaxation more blood flows into the artery. Division of the cervical sympathetic of the rabbit affects the circulation on that side, the whole ear being redder than normal, its arteries being obviously dilated, its veins unusually full, innumerable minute vessels before invisible come into view, and the temperature may be more than one degree higher than on the other side. If the upper end of the cut nerve be now stimulated by the interrupted current, the ear again becomes pale, much paler than normal if the current be strong, the vessels diminish in size, so that the smaller ones disappear, and the temperature falls. When the current ceases, flushing again occurs." (M. Foster.)

Although the trigeminus and eighth pair of nerves, together with the sympathetic, bring into intricate relationship the buccal and pharyngo-nasal cavities and the ears, an anatomical description of their distribution would lead me too far. It is difficult to believe that any considerable region of these lesions can long exist without affecting the ears (and indeed the eyes), and even more remote regions than those mentioned are frequently brought into sympathetic relationship with these organs of special sense as daily clinical experience proves.

Having presented this statement of the generally accepted theory of vaso-motor action, I shall now bring forward some of the diseases of the teeth that are commonly concerned in giving rise to sympathetic aural disease. The general surgery of the jaws, including the pathology of the subject, does not concern us as much as the minor diseases which are more likely to be neglected. It must here be confessed that, as a profession, our knowledge of the diseases of the teeth, gums, etc., is not what it should be. The teeth, which were once universally regarded as lifeless objects, are still treated by the profession in general without a due regard to the influence they exercise over the health of the individual.

It was not until the beginning of this century, when John Hunter, Fox, and others, laid the foundation of their true pathology, that the teeth were treated on a scientific basis. Within the present decade Wedl and others have brought the pathology of the teeth up to the standard of modern requirement. The apathy which has always existed on the part of the profession regarding this subject has left the treatment of diseases of the teeth in the hands of men who have occupied themselves almostly exclusively with its mechanical department, and who, as a rule, have but little to do with the teeth in a medical aspect. It is greatly to be regretted that a field of such interest has been abandoned by the profession. Many affections of the teeth lead to most grave and intractable diseases of the regions presided over by the sympathetic system, which are often suffered to be long unattended before they are brought under appropriate management. Thus an ear, eye, or throat difficulty may become firmly seated, or a neuralgia, which renders life intolerable, established. When I look back at the operation for the removal of Meckel's ganglion, which I twice witnessed, for the relief of facial neuralgia, it occurs to me that the most simple of remedies could have controlled that disease when it was first induced as was probable in these instances by a carious tooth.

The teeth are a prolific source of nervous diseases for sufficient reasons; their development and decay, ill usage by improper foods and drinks, the unhealthiness of the saliva, the lack of cleanliness, etc., are all sources of greater or less irritation. The mouth, moreover, being richly supplied with nerves and bloodvessels which are distributed to its extensive mucous membrane, is highly sensitive to all of these influences.

The ear begins to suffer from sympathetic dental irritation from the time of the appearance of the two central incisors of the lower jaw, which are cut at about the seventh month, until the completion of the first dentition, which is usually before the end of the second year. The gums may become alarmingly swollen during this eruption of the milk teeth, and in some rare instances periostitis of the jaw occurs. Wedl says, that according to Trousseau, the—

> "Swelling of the gums is not an aching produced by the tooth beneath, but is rather due to the inflammation, and he adduces in support of his assertion the fact that this turgescence occurs and disappears again, without the emergence of the tooth through the gum; direct experiment also confirms this view, for if a needle be inserted into the swollen gum, it is found to be three or four millimetres in thickness, from the surface down to the tooth. . . . The painful swelling of the gum and the toothache give rise to various symptoms, particularly to flushing of the cheeks, salivation, fever, agitation, and likewise to a few nervous symptoms."

Catarrhal affections of the buccal cavity and of the naso-pharynx are at this period of common occurrence and increase the dental irritation.

Caries of the milk teeth is frequently met with, and a very considerable number of children have toothache from this cause. The irritation in the infantile mouth from the causes above enumerated creates more or less sympathetic hyperæmia of the ears before attention is directed to that region by earache. It is, therefore, generally found that a purulent otitis media has been established before the physician is called, and not unfrequently great deafness already exists, the amount being difficult to estimate at this age, but in some cases it is sufficient to establish deaf-mutism: indeed, the latter frequently occurs from non-purulent affections which produce changes in the conductive apparatus that are unrecognizable by an examination *per* the external meatus. I think but few aural catarrhs of infancy have not been preceded by the hyperæmia of first dentition. The instances of grave cerebral irritation from cutting the milk teeth are quite common, and tend to complicate the diagnosis of acute aural disease.

Second dentition commences about the sixth or seventh year, the first molars of this permanent set inaugurating the shedding of the milk teeth, which, with their alveoli, suffer reabsorption. Second dentition is concluded (with the exception of the wisdom teeth) by the cutting of the second permanent molars at the twelfth or thirteenth year.

The permanent teeth are liable to be attacked by caries as soon as they are cut. The first of this series, sometimes called the "six-year molar," is, according to Dr. Frank Abbott (manuscript communication), much exposed to decay when cut, as it is then imperfectly developed and very susceptible to the usual causes of decay, such as the lodgment of foods in the imperfect spots, etc., and furthermore it is generally thought to belong to the temporary set, and no notice is taken of it until pain results from exposure of the pulp cavity caused by excessive decay: children under eight years of age frequently experience the loss of the entire crown of this tooth from caries, and a neglect to preserve it often leads to inflammation and abscess, which latter may open on the gum or face, or in severe cases necrosis of the jawbone may result. This particular grinder is, therefore, a source of much earache and toothache, every fresh cold causing an exacerbation of the nervous irritation. The other permanent teeth are not exempt from attacks of caries at this period. Aural affections that have arisen from the sympathetic irritation of the first dentition are, in many instances, no sooner cured than they are again aroused into sudden activity by the cutting of the second teeth, the eruption of each tooth being the signal for an earache and otorrhœa.

The act of cutting the second teeth is attended by no greater difficulties than the first, unless there should be irregularities of structure or arrangement, anomalies that are, however, not unfrequent. Heath relates a case of malposition of the teeth that gave rise to a tumour; in this instance some supernumerary teeth were found imbedded in the upper jaw of a patient aged twelve years.

During the period of the irruption of the second teeth the child begins his active out-door life; and, indeed, the struggle for existence which now begins, calls for exposures before unknown. Catarrhal affections especially are now frequent.

A short time ago opportunity was afforded me to examine the aural cases in a large charitable institution containing children of both sexes who were almost exclusively within the period embraced by second dentition. About six per cent. of the inmates were found to have otitis media purulenta, or were the subjects of earache. (I doubt not the actual number affected with aural disease was far greater, for only those reported who had earache or offensive discharges.) The examination of this group of over thirty children, where second dentition was active, impressed me more than any previous observations on individual cases. In some of these cases there was earache and toothache at the same time, while in others the exact location of the pain could not be determined. The condition of the teeth of these children afforded an instructive study of this subject; in all of them some anomaly was found to exist; either the irruption of the teeth themselves had greatly irritated the gum, and this was especially the case where fragments of the coronary substance of the milk teeth still remained attached to the gum, or the second teeth were irregular, or carious. A general catarrhal condition of the mouth, aggravating all the above conditions, was commonly present.

During the first and second dentitions, it may be stated incidentally, the mouth has but little rest. The whole of the period of the first is frequently an uninterruptedly painful process, which is rapidly followed by the steady advance of the second teeth, whose early decay is imminent. To this can be added the irritation of adherent fragments of the milk teeth, and the not unfrequent anomalies of development, neglect of cleanliness of the mouth, and the presence of abnormal saliva. Affections of the throat, nose, and other parts, when present, increase all of these difficulties. The ear is particularly liable to attacks of catarrh when hyperæmia exists from any cause, and there are but few persons who pass through the period of childhood without having at some time experienced from this source an earache.

The general health, moreover, can scarcely fail to suffer from this local irritation, as well as from the imperfect assimilation that arises from the difficulty experienced in the mastication of food.

The appearance of the third molar, or wisdom tooth, is very frequently the source of grave aural affections, and if the ear be found in a diseased condition when its irruption begins, there will be an aggravation of the malady. Prosopalgia, abscess, and even necrosis of the jaws, are very often developed by this irritation. The difficult irruption of this tooth, which comes through the gum between the 18th and 30th years, is owing mainly to the density of the alveolus and covering membrane, which at the late time of its appearance resist penetration.

Malposition of the wisdom tooth from anomalies of the germ is of occasional occurrence, and when from this cause it occupies a horizontal or oblique position in the jaw, and is, in cutting, urged onward against the second molar, irritation results. In these cases the grinding surface of the wisdom tooth presses against the root of the second molar, causing greater or less neuralgic pain. Insufficient length of the jaws, especially of the lower one, occasions crowding, and obstructs the irruption of these teeth. In numerous instances the inflammatory action is not confined to the teeth, but the connective tissue as far as the pharynx is involved. Dr. Abbott (Ms. communication) relates two cases where phlegmonous inflammation proved fatal by asphyxia, and another, in which the abscess in the pharynx was ruptured by the patient, who violently grasped his throat to escape suffocation. Immediate relief was thus obtained, and ultimately he recovered. In this case the offending tooth, together with the first and second molars and the two bicuspids of the same side, with their alveolar attachments, were lost by necrosis.

At the present time a patient, aged 24 years, is under my care, who had a mild attack of aural inflammation from sea-bathing; the membrane not clearing up, as I was accustomed to witness, a more close examination of the mouth was made, when it was discovered that a superficial abscess had formed over the left lower wisdom tooth of the same side. Closer inquiries elicited the fact that this tooth had been a source of more or less irritation for a year or two. Upon its removal the gum slowly healed, and the aural symptoms began to improve.

Another case has just been seen by me, that of a lady, aged 21 years, who has gradually lost her hearing during the past 18 months, and can now only hear shouting. For more than a year past earaches have been frequent, and the tinnitus aurium was so distressing that her rest at night was much broken. The membranæ have become atrophied, and retraction has taken place. Examination shows the cause of this state of things to depend on the irritation of both the lower wisdom teeth that penetrated the gum with difficulty. Her upper wisdom teeth can be felt emerging from the maxillary tuberosities of the superior maxillary bone, and from her former experience trouble from their irruption is anticipated.

Sometimes these teeth are very late in cutting. Dr. Abbott relates (Ms. communication) the case of a man, aged 60 years, under his own observation, whose two upper wisdom teeth have just appeared.

Irregularities of this tooth are often observed. Heath, in his work on the jaws, reports the case of a woman where an upper wisdom tooth projected through the cheek; and he also mentions the fact that abnormally placed molar teeth have penetrated the inner plate of the alveolus, and lodged beneath the mucous membrane of the palate.

I myself have frequently observed anomalies of this tooth, especially where it has presented its grinding surface towards the buccal wall. The irritation in the jaw occasioned by this tooth is very apt to be soon felt in the ear, and the hyperæmia thus occasioned in the external meatus or drum-head may easily mislead as to the real cause of the difficulty.

Should the throat be involved, as indeed it is likely to be, in these cases of difficult dentition, the sympathetic action in the ears will be found to depend also on influences other than the irritation of the dental filaments of the fifth nerve, for the pharyngeal and tonsillar branches of the eighth cranial nerve will bring the throat into direct relationship with the sympathetic system through which the ear is affected.

Severe aural irritation long continued may establish an inflammation, the etiology of which will be obscure, especially if the patient has been exposed to well recognized causes of aural disease, unless the part taken by the teeth be kept in mind.

However important the aural affections from the first and second dentitions may be regarded, they are equalled by those arising from diseases of the teeth subsequently. These affections of the ear in youth are nearly always of a painful nature, while, on the contrary, in those of later years that symptom is more likely to be absent.

The pain of the teeth, which we familiarly associate with their inflammatory condition, is signally absent in many of their affections, and it is to the absence of this symptom that their chief danger is attributable. Clinical experience has furnished me with numerous examples illustrative of this fact, where most extensive and destructive disease of the teeth, gums, etc., were wholly unrecognized by the patient until his attention was drawn to them as the cause of tinnitus aurium and deafness.

The principal disease of the teeth met with at the period now under consideration, is caries. On its frequency it is unnecessary to dwell, for but few individuals have failed to experience the nervous irritation by which it is sometimes accompanied.

Decay of the coronal structure of the teeth is not in itself painful, but, indirectly, it frequently causes irritation by the mechanical injury done to the tongue or gums by the sharp edges and points. Thus a jagged tooth may produce abrasions and ulcers on the tongue, or during the act of mastication the gums may be wounded. Hilton ("Rest and Pain," New York, 1879, page 45) gives a case where the tongue was wounded by a carious tooth, and the gentleman affected suffered greatly from a persistant earache, for which he had received local treatment without any relief being obtained. Mr. Hilton, on being consulted, discovered an ulcer on the tongue, which rapidly healed when the rough edges of an adjacent tooth were smoothed off, and there was no return of the disease.

A case has just passed out of my own hands which has an interest in this connection; a child was suffering from an earache, the cause of which was not apparent until an examination of the mouth showed that the aural difficulty had its origin in the irritation produced by a fragment of enamel, left behind by a milk tooth, that was wedged in the gum along the side of a newly cut molar. The membrana tympani in this case was decidedly inflamed. The removal of the foreign substance from the gum, however, cured the disease.

The buccal mucous membrane, likewise, becomes diseased from the sharp points of teeth which cause its ulceration.

A consideration of the general pathology of the teeth would be beyond the scope of this paper, but regarding the progress of the caries which attacks the crown of the tooth it may be said, that it goes on, when not arrested, until finally it perforates the pulp cavity, when usually pain is experienced. In many instances slight changes of temperature in the air inhaled, or in the fluids drank, will cause intense pain in an exposed dental pulp or unprotected neck. During pregnancy this sensitiveness seems to be much greater, and facial neuralgias, etc., are more common. There are, however, a great many persons who lose many or all of their teeth from caries without experiencing any pain, but who, nevertheless, seem to have reflex irritation affecting the ears all the same. These cases are frequently most grave as regards the incurable deafness resulting, because of the painlessness of the dental disease as well as of the long-continued aural hyperæmia thus excited.

Inflammation, however, is seldom confined to the dental pulp, although it may in certain cases remain a long time in a chronic state. The periosteum of the root, and of the alveolus, is sooner or later the seat of acute or chronic inflammation, which may not remain confined to a single tooth. The gums as well as the periosteum are usually involved in the inflammatory process, which, in severe cases, extends to the jaws, the connective tissue, the glands, etc. Suppuration finally gives relief to these cases, although in some instances a train of grave and more chronic action sets in to last for months or years. Abscess of the gum is a common occurrence in connection with inflammation of the teeth. Affections of the antrum and nose can only be alluded to here, although, when present, they should not be overlooked in the treatment of aural disease.

A painless affection of the teeth is described by Wedl, which may be regarded as likely to excite reflex aural disease without the knowledge of the patient. He says:—

> "In these cases, the gum becomes detached from the neck of the tooth, and pressure upon the alveolus forces out a puriform fluid. This condition, which has been described as *pyorrhœa alveolaris*, particularly by French writers (Toirac, and subsequently Desirabode), results, without notable pain, in the loss of the affected tooth. It also attacks whole sets of teeth in one or another jaw, and is met with, more frequently, in persons of middle age, and may last several months and even years. At last all the teeth in the jaw become loose and are lost. While the latter effect is being produced, the inflammatory symptoms in the gums often disappear apparently; but if pressure be made with the finger along the root, towards the neck of the tooth, a tenacious gelatinous fluid oozes out, indicating the existence of inflammatory affection. . . . In these cases, then, we have to do, first of all, with a catarrhal inflammation of the gum, which afterwards extends to the root membrane."

Irritation from concealed fangs, left on extraction, or after decay of the rest of the tooth, is frequent, and from this source neuralgias arise in which the ear participates in numerous instances.

Hypertrophies of the teeth and alveolar processes are a common result of continued irritation of the dental nerves. Those of the periosteum of the root are, perhaps, the most common. These proliferations (exostoses) of the teeth may augment the size of the roots affected to several times their normal growth; they are more frequently found on the bicuspids and molars than other teeth; they are of slow development and give rise to painful neuralgias. A case is reported in the *Quarterly Journal of Dental Science*, 1857 (cited by Wedl), by J. L. Levison, where death ensued from this cause, the irritation of the exostosis exciting inflammation of the membranes of the brain. Tomes ("System of Dental Surgery" cited by Wedl) reports two cases of epilepsy arising from exostoses of the teeth.

Abbott (Ms. communication) reports the case of a lady, aged 60 years, who suffered greatly from neuralgia for ten years, during which time she had two operations performed (division of dental nerves) without benefit. The removal of a tooth having on its root an exostosis gave entire relief.

In another case all the molar teeth were removed from the upper jaw of a lady for neuralgia, and were all found to have hypertrophied fangs. It is noted as of interest in this case that the teeth were all sound and had antagonizing teeth.

Wedl remarks that: "Exostosis is a disease of old age. The painfulness is due to increased tension of the nerves of the periosteum of the root, and to secondary affection of the branches of the nerves of the pulp." Where aural disease has been established from this cause, the neuralgias also present are frequently thought to have their origin in the ear.

Catarrhal inflammation of the gums occurs at all ages, and usually in connection with affections of the teeth. Its duration when chronic in character is indefinite. Chronic catarrh of the gums may give rise to periostitis of the roots of the teeth, when reabsorption of the margin of the alveolar processes sometimes takes place, and the tooth becomes loosened. Catarrh, however, is usually confined to the incisors, and seldom attacks all the teeth at the same time.

In acute exanthemata the gums are subject to irritation, and may afterwards remain in a hyperæmic state, especially during the period of dentition.

Hypertrophy of the gums and Epulis must be regarded as probable causes of aural disease.

Anomalies of secretion of the mouth are of frequent occurrence, and an excess of either alkalinity or acidity may exist.

Odontolithus depends on an excess of the normal alkaline condition. Under the head of tartar, Wedl describes several varieties of this affection. The most common are the white-porous, the gray-brownish, dark-brownish, dark brown with black superficial layers, now and then like ebony, and dirty green. The deposit of tartar on the teeth begins at the border of the gum, and insidiously progresses until, in some instances, one or more of the teeth are entirely covered.

Ambrose Paré (English translation by Tho. Johnson, London, 1634, p. 666 *et seq.*) described this condition as "Earthly filth of yellowish colour which eats into them [the teeth] little by little as rust eats into iron. . . . This rusty filthiness, or as it were mouldiness of the teeth doth also ofttimes grow by the omittings of their proper duty, that is chawing."

Wedl says, "Castle asserts that the tartar sometimes is deposited even in the foramen which serves for the transmission of the dental nerves, and occasions severe neuralgias in the branches of the fifth pair; that it is deposited, also, upon artificial teeth, upon the gold and silver or gutta percha on which the artificial teeth are set, but never within or upon the alveolar processes."

The coronal surfaces of the teeth are unaffected by the contact of tartar, but it soon sets up irritation of the gums which become swollen, bleeding easily, and finally suppurating in the severer cases. There is a retention of purulent mucus and particles of food, which undergo decomposition; and catarrhal inflammation with its secretions is frequently present and increases the formation. The teeth, as the disease advances, become loosened, and sometimes toothache is present. The tartarous masses, when rough, irritate the gums. This disease is said to be the most frequent cause of dental caries.

Tartar seldom attacks the teeth before the sixth year, but children are sometimes subject to its rapid formation.

The foul breath of this affection is a prominent symptom; in fact a deposit of small extent is often quite sufficient to taint the breath, and when other cause for foul breath is unknown the mouth should be examined.

This most superficial presentation of some of the affections of the teeth scarcely serves as an introduction to the interesting pathological field to which so many aural diseases owe their origin, but it is hoped that from what has been brought forward a better knowledge of the etiology of aural diseases may finally be obtained.

From a careful study of some of these affections I have thus been led to the conclusion that they may arise from causes not indicated by the accepted etiology: such are diseases of the meatus auditorious externus, known as seborrhœa, obstructing accumulations, diffuse and circumscribed inflammations, and inflammations of the middle ear.

Any treatment of these affections, based on local symptoms alone, will frequently be unavailing, and success can hardly be assured without attention being given to their true causes. A familiar illustration of the modus operandi of the above-mentioned affections of the meatus is witnessed where the nervi-vasorum supplying the vessels that go to this region connect by their filaments through some of the sympathetic ganglia with the nerve coming from a diseased tooth. The result of the irritation of the dental filament of the fifth pair is a transmission of the irritation along the nervous route thus established to the ear, where vessel dilatation takes place. The vessels going to supply the meatus are thus distended beyond their normal state, and congestion, acute or chronic, takes place. Pain in the tissues is then experienced as a result of an acute attack, or on the other hand, where chronicity is the condition, pain is less marked. We have here to do, probably, with a reflex irritation conveyed to the anterior auricular branch of the temporal artery in its ramifications on the walls of the meatus auditorius externus with resulting hyperæmia of the part. One sequence of active hyperæmia may be diffuse inflammation of the meatus; another may be circumscribed inflammation, or chronic hyperæmia may exist, resulting in an unusual secretion of cerumen. The latter condition remaining active for a longer period of time, the meatus may be completely occluded by the hypersecretion, and intermittent periods of excitation will most likely be attended by exfoliations of epithelium, which give rise to ceruminous plugs of alternate layers of epithelium and cerumen, a transverse section of which will possess the characteristic annular appearance of an exogenous growth. When a furuncular inflammation is the consequence of this vaso-motor action the stage of hyperæmia has, of course, been passed, and we have to deal with a true inflammatory process, the persistency of which is well known.

The treatment of these boils in the ear is less likely to be unsuccessful when their remote cause is ascertained. Hyperæmia thus induced in the external auditory meatus by reflex action frequently manifests itself by a slight increase of the normal ceruminous secretion, or by an itching with a desire to scratch the parts; or there may be a distressing feeling of formication deep in the ears.

The fact that the conductive apparatus in many of these diseases of the meatus is but little affected seems to strengthen this hypothesis of their origin, for the tympanum receives its principal blood supply from the tympanic branch of the internal maxillary and the stylo-mastoid branch of the posterior auricular, sources independent of the vascular supply of the meatus. It is quite unlikely, however, that any serious aural trouble can long exist in any given region without neighbouring tissues being more or less involved.

It is a significant fact, worthy of mention in this connection that the sympathetic aural affections of infancy and youth are principally confined to the middle ear, and it should be borne in mind that the entire nervous distribution for the milk teeth, together with their alveoli, etc., give way to another development belonging to the teeth that are destined to be permanent.

Affections of the root membrane may arise from the use of *mercury*, which acts through the gums, and may affect a whole set of teeth, especially those of the under jaw, which are most in contact with the saliva. The teeth are, without much if any pain, forced out of the alveolar processes by the swelling of the periosteum. Albrecht (cited by Wedl) states that several other substances may produce similar effects, but that it is not such a common occurrence with them as it is with mercury. Such are the preparations of gold, copper, arsenic, antimony, iodine, and the employment of digitalis and opium, castor and croton oils, and cantharides may have a like effect. A dark-brown deposit from tobacco smoke is often found on the lingual surface of the upper molars, and to a less extent on the teeth. This deposit, which may attract tartar, occurs frequently in connection with denudation of the fangs, especially among seamen, who are known to be great smokers. In this affection a gradual encroachment on the gum takes place, causing its absorption, a process favored, perhaps, by senile changes, as youthful smokers seem to be exempt.

In the foregoing pages I have endeavoured to show some of the injurious influences that diseased teeth have on the ear, and it now remains to consider the no less important ones that arise from the attempts made to preserve them, or replace them, when lost, by artificial devices.

Cavities in the teeth are filled with a variety of substances when the ravages of caries become manifest. I shall only allude here to those known to be injurious, premising, however, that future investigations may, in throwing more light on the subject, determine that other fillings are inimical to health.

The most universally used filling, excepting perhaps gold, is an amalgam consisting of about two parts of tin, one of silver, and as much mercury as will cause the mass to adhere together. Actual experiments show that 0.12 grammes of the tin and silver mixed as above will require 0.09 grammes of mercury to form the cohesive mass used by dentists for filling teeth. Where ordinary care is not exercised in the preparation of this material, a larger quantity of mercury would remain. The quantity of this amalgam inserted in a single tooth varies from 0.60 to 4.00 grammes, and in the mouths of many individuals as much as 20.00 grammes have been found inserted in the teeth. This amalgam, composed so largely of mercury, is usually much exposed to the attrition of mastication and the movements of the tongue and cheeks. The free mercury which it was found to contain by Dr. William Stratford (Ms. communication), is worn off in small particles by the friction in the mouth. These particles, when submitted to dilute hydrochloric acid, yield a chloride of mercury. That toxic effects may result from wearing these fillings in the teeth is, therefore, established.

Of fillings, in general, it may be said that not unfrequently necrosed matter or a diseased dental pulp are covered up by fillings inducing great irritation from the confined products of inflammation or decomposition. Although this condition is usually characterized by great pain, yet when the irritation assumes a chronic form, it may long exist without there being sufficient pain to attract attention. Under these circumstances caries and periostitis may supervene, and even exostosis of the fangs may occur.

Amalgam fillings are frequently built out, as it were, on a carious tooth, and after gradual disintegration from wear, their roughened surfaces may cause ulcers on the gums or tongue.

It has been observed that when teeth have amalgam fillings, the effect is to weaken the enamel.

A variety of metals are sometimes found in the teeth, such as gold, platinum, silver, tin, and amalgam, and even different metals are often inserted in the same tooth, sometimes in the same cavity. When a metallic or vulcanite plate is also worn in the mouth, the conditions for harm are yet more favourable.

Artificial teeth are worn by an exceedingly numerous class, and it is believed that the health of a large number of these people is imperiled by the material used in the construction of plates, as well as the methods of fitting them to the mouth. This subject, therefore, has an interest which concerns the profession at large, as well as the specialist. The healthfulness of plates worn in the mouth, especially the vulcanite, has been much discussed, but no definite conclusions in regard to the matter seems to have been reached; at all events, the dentists in this country, to a limited number only, reject materials the use of which is thought to be injurious. The extent of the injury sustained by the race, traceable directly to the harmfulness of dental work, cannot be easily estimated, for those who have defective teeth prefer that fact to be unknown to others, and dentists have not always found it to their interests to discard present methods before less harmful ones are discovered. It is probable that the demand for cheap dental work has led to the more frequent employment of these injurious substances. These plates are frequently put into the mouth over carious fangs, inflamed gums, and collections of tartar, completely encasing them, and retaining the foul secretions and decomposed particles of food usually present. The ingress of air or cooling liquids is prevented under these circumstances, and the decomposition of the retained fluids, etc., is thereby favoured. The upper plates are especially obnoxious under these circumstances. Entire plates are often found under these conditions, supporting one or two artificial teeth only.

Plates are constantly found in the mouth as described above, without pain or apparent inconvenience to the wearer, owing to the tolerance acquired by long use. That septæmic poisoning may occur under such favouring circumstances is possible, for the diseased tissues are frequently bathed in pus.

That we should find this state of things common among the uninformed is not a matter for surprise, but the neglect which the subject has received at the hands of the profession is to be regretted. It would be impracticable to bring forward here the numerous cases where, from a want of proper knowledge of the subject by both physician and dentist, permanent injury to the patient has resulted from wearing unsuitable plates in the mouth.

One instructive case, however, may be related with advantage where the victim was a physician under my own observation. He had worn in his mouth for six years a gold plate supporting two upper incisor teeth. The plate seemed to be satisfactory in every way, when the wearer, finding his breath becoming very foul, applied to a dentist to have removed any tartar that might have accumulated on his teeth. Tartar was only suspected to exist on the lower incisors, but the dentist, who in this instance was also a physician, thought it well to explore the whole mouth, when, to his patient's surprise, he found the gum to be partially detached from the lingual surface of all the upper teeth, the denudation extending down the teeth a distance of from five to seven millimetres below the gum. The origin of the foul breath was now discovered to be the ulcerous condition of the separated gum, the retained pus soon becoming decomposed. The denuded fangs were slightly coated with tartar. The patient now recalled to memory the fact that for more than a year he had experienced tinnitus aurium and slight deafness. This state of the mouth was attributable to a bad fitting gold plate, which pressed the teeth of the upper jaw where the gum was attached, and its constant movements kept the gum in a hyperæmic condition. In this instance the patient was unconscious of any disease in his mouth. He was in the prime of life, and his health in general was unexceptionable, yet he himself was experiencing the modus operandi of the denudation of the teeth from disease resulting from the pressure and movements of an ill-fitting plate in his own mouth.

Experiences like the above are by no means infrequent, and it is to be feared that the teeth are, in too many instances, treated by those whose mechanical skill is greater than their pathological acquirements.

Gold, platinum, and vulcanite are the principal substances used in the construction of plates; of the latter, more will be said further on. Silver and celluloid are sometimes also used. Gold is never employed in its purity, but is alloyed with silver and copper down to 18 or 20 karats of fineness; gold plates decompose slowly in the mouth, but some old plates readily yield, when washed by saliva, traces of copper. Silver is liable to be attacked by the acids of the saliva or foods, and, is, therefore, not a desirable metal for plates. Platinum, on the contrary, is least liable of all metals used for this purpose to be affected by chemical agents; where its use requires great inflexibility, it is hardened by the addition of iridium. In all kinds of plates the mineral teeth are fastened by means of platinum pins.

It should be noted that in all of the plates (excepting, perhaps, those of platinum) more than one kind of metal is used in their construction, which arrangement may admit of chemical action taking place, and where a gold plate touches amalgam fillings the latter seems to wear away more rapidly. The same result has been observed where amalgam and gold fillings touch. Metallic plates are thus often found in contact with fillings. What the effect of these metals, constantly worn in the mouth by some individuals, may be on their health, cannot at present be stated with certainty, but the *well-known fact that when two different metals are brought into contact in the presence of a dilute acid or solution of a salt, a current of elec-*

tricity is generated, should lead us to infer that their harmlessness to either the sick or well is problematical.

The questions of the action of metals on the body in health and disease—metalloscopy and metallotherapy—were prominently brought forward by Dr. Burq thirty years ago, and Charcot and others have recently completed an investigation of the subject, a report of which is just issued. From the existing knowledge on this subject, however, we cannot derive any assistance, and a further consideration of the subject would lead me too far.

Vulcanite plates, however, produce diseases that are more frequently the source of reflex aural disease than any of the others worn. They have been in use for over twenty years, and there adoption is very general. The constituents of this material are caoutchouc, the sulphur required in the vulcanizing process, and vermilion, or the sulphide of mercury, used for the color it imparts. The quantity of the latter ingredient is believed to be equal in weight to both the other substances mentioned, accurate knowledge, however, is withheld by the manufacturers. These combined substances form a plastic mass which is found in commerce as thin sheets suitable for moulding into plates for the vulcanizing process. This plastic substance when chewed for several hours is so much broken up that it parts with the vermilion, and Dr. Stratford (Ms. communication) found that when the saliva of persons thus chewing it was treated with a suitable reagent, it yielded a salt of mercury.

Two instances have come to my knowledge where the employés in a dentist's laboratory acquired the habit of chewing this soft preparation. They were about 18 years of age. One of these young men who had been addicted to this habit for nearly a year, had an eruption on the inside of his arms, which remained while he continued this practice; the eruption was red and scaly, and the itching was excessive. The other youth only continued the practice for three weeks, but during this period of time he was rarely without a large wad in his mouth. In a week's time after commencing, he experienced itching on the inner aspect of the arms, and during the second week there was an eruption similar to that of the person above described; the eruption extended to the face and legs, and the itching was most intolerable, especially at night.

During this time he felt badly, and his lips were sore. At the end of the third week he abandoned the habit and the eruption of the skin gradually disappeared. Neither of these persons voluntarily swallowed the saliva, which was very copious during the chewing, as it had a "sickish taste." The sputa became coloured by the vermilion after several hours active chewing. The history of theses cases is not complete, as I myself only saw the eruption on the arms of the youth to whom reference was last made above. I presume, however, it was the affection described by authors under the name of eczema mercuriale.

To bake this soft material into plates of sufficient hardness to support artificial teeth, a temperature of about 160° C. is required. This degree of heat is not sufficient to completely volatilize the contained vermilion and sulphur. Vulcanite plates are porous, and when the process of baking is imperfect, as is frequently the case, their colour is brighter, they are less dense, and, therefore, when used, more readily part with the vermilion and sulphur which they contain. In the process of finishing these plates, the fine filings become packed into these pores, ready to be gradually given up as the plate is worn. The acids, which sometimes are found in the mouth, do not materially affect vulcanite plates, but when subjected to the action of the saliva, which is ordinarily alkaline, it is believed that they are liable to become softened, and, therefore, more easily broken down. The gradual disintegration of these plates, as they are worn in the mouth, liberates a salt of mercury whose poisonous effects are well known.

Until physiological science has more accurately determined the effects of small quantities of mercury and sulphur when taken into the system by absorption, and until we are able to estimate how much of these drugs are given off when the plates are constantly retained in the mouth, no reliable estimate can be formed of the effects of wearing them. In judging of the action of powerful agents like the salts of mercury, the action of minute quantities of other drugs may serve us as a guide: thus, Dr. E. G. Loring (Piffard's edition of Philips's *Materia Medica and Therapeutics*, page 28, *et seq.*) states that he has dilated his own pupil for twelve hours with the $\frac{1}{460000}$ of a grain of atropia. I myself have tasted the bitter in $\frac{1}{20000}$ of a grain of picric acid. Arguments, however, are scarcely required as to the undesirability of taking mercury into the system when not intentionally administered under competent advice.

Vulcanite plates, besides yielding a poison, are otherwise injurious to health. Inquiries from dentists elicit the fact that at least one-third of all those who attempt to wear them experience great irritation of the mouth, an irritation that is frequently accompanied by hyper-secretion of the buccal fluid. The sufferer usually lays aside the plate until informed of the necessity of becoming accustomed to its presence by uninterrupted use. Vulcanite is a non-conductor of heat, and the effect of its contact with the highly sensitive tissues of the mouth is to produce hyperæmia and inflammation. Another source of injury is the very close contact of these plates, which is maintained by atmospheric pressure and may favour the absorption of their substance. In such cases the hard palate, on account of the larger surface it exposes to the plate's action, suffers the most, but the gums and the lingual and buccal surfaces seldom escape.

The hyperæmia which a continuance of the thermic and irritant action produces on the hard palate is frequently very marked; the parts are often found bathed with pus, especially the granular development that under these circumstances is found in the "air chamber" of the plate.

In some instances these granulations are polypous in their nature. The lower plates are in some respects less irritating, because they are not so large or so closely fitted, but, on the other hand, from being more completely exposed to the saliva in the bed of the mouth, they are liable to earlier softening and disintegration. When these plates are worn uninterruptedly day and night, of course their injurious effects are much greater.

The practical results of wearing vulcanite in the mouth are frequently seen; I have the notes of one where a gentleman, aged sixty-five years, wore a full upper set day and night for a period of ten years. He suffered during this time from constant irritation, and the heat of his mouth required that the plate should be frequently removed and the mouth cooled with water. Constantly increasing irritation finally seemed to be the cause of a carcinomatous growth, and after an operation for its removal, he died.

A medical friend of the writer has communicated a case that further elucidates the effects of these plates. He was consulted by a lady aged thirty-one years, whose principal complaint was of burning sensations in her mouth and throat. She had for six years worn a small vulcanite upper plate sustaining two teeth, but for about three months previous to her visit she had worn a larger plate, which seemed to greatly increase her difficulty. Her lower molars and bicuspids, which were previously sound, were becoming loose from denudation of the fangs and caries of the necks. The secretion of saliva was so excessive that the pillar upon which she lay at night was by morning saturated. She had been advised by her dentist to wear the plate day and night, and thus get used to it. Examination of the mouth of this patient showed the gums, tongue, hard palate, and whole buccal mucous membrane, as well as the throat, to be swollen and hyperæmic. The eyes suffered sympathetically, and she was generally nervous and depressed. This condition was unimproved by any treatment until a small gold plate was substituted for the vulcanite: she then made a complete recovery.

Another case coming under my own observation has a particular interest in this connection. The case was that of a gentleman of fifty-five years of age, whom I was called to see in consultation with Dr. C. J. Dumond. He had long worn a full set of artificial teeth mounted on vulcanite plates. His health had been for many years much shattered from some cause. For about a week before I saw this patient he had worn a new set of upper and lower vulcanite plates. They were of a bright brick-dust colour, and, therefore, it is probable that they were imperfectly baked. The lower plate rested in part on a portion of gum made sensitive by the recent removal of two teeth from the left side of the jaw. After wearing these new plates for about a week, he was suddenly taken ill. The symptoms were nausea, which was soon followed by vomiting and purging, and the stomach was painful to the touch. These symptoms increased in severity from day to day, until he called in his family physician; he had not done so earlier on account of his absence from town.

The doctor, on making an examination of the case, suspected that some toxic agent was at work, and when inspecting his mouth discovered the vulcanite plates to which allusion has been made. When I saw the patient, with Dr. Dumond, the more acute symptoms had passed away, and he only complained of prostration. The mouth, which had been sensitive and feverish, was better; the tongue, however, was still somewhat swollen and *heavily furred on the left side.* The patient made a rather slow recovery from this attack, and for some weeks he suffered from a cutaneous eruption over most of his body. He has not since worn the vulcanite plates.

The interesting feature of one-sided coating of the tongue, in connection with irritation of gums or tongue on the same side, has been reported by Hilton ("Rest and Pain"), and by him attributed to sympathetic irritation through the nerves, the Gasserian ganglion being thought to be concerned.

Celluloid has been brought forward as a substitute for vulcanite in the construction of plates, but it has not been adopted to any extent. An objection to this substance would be its non-conductivity.

Regarding plates in general, it may be said that, if badly fitted, they are liable to do harm if any teeth remain in the mouth, by pressing the gums against the natural teeth; this pressure creates hyperæmia of the gum, and it is, therefore, probable that a constantly shifting plate always does some injury.

That all of the morbid conditions of the mouth which have been herein described may exist without serious or recognizable aural affection being developed, cannot be denied, but progressive disease of the ears, often without the occurrence of pain, is, in my experience, more common when these oral affections are present than when the mouth and throat are in a healthy state.

In many of the aural diseases that depend for their origin on reflex nervous action, there is one pretty uniform symptom which comes on after irreparable injury has been done to the conductive apparatus: that symptom is tinnitus aurium.

In accumulations of cerumen, etc., in the external meatus, even when enormous, the patient is usually unaware of their presence until, from some accident, such as bathing, they become impacted against the drumhead; then the unbearable tinnitus and pain require attention.

In conclusion, the writer would earnestly draw attention to the importance of a more general knowledge of orology being acqured by the profession. Frequent attacks of toothache should not be unheeded in any case, as the nervous irritation from this source not only sets up local inflammation that often leads to periostitis or abscess, but even more important lesions in distant parts may follow.

An oroscopic examination should be made whenever occasion seems to require it, in order that, if necessary, the patient may be sent to a competent dentist to have such mechanical assistance as the case may demand. No practitioner, moreover, can be too well informed on the known or probable effects of the introduction of metals, etc., into the mouth to be constantly worn, as he may thereby prevent the mouth being made the depot for the receptacle of substances that sooner or later exert a deleterious influence; for the number of individuals who, at the present time, are thus wearing substances either known to be poisonous or whose action yet remains in doubt, is very large.

The early decay of the permanent teeth, especially of the first or "six-year" molar, which parents, or others interested, are likely to neglect from inadvertently regarding it as belonging to the temporary set, and, therefore, destined to be lost, is important to be kept in mind, for from this source springs much of the earache of childhood. The delay in the cutting of the third molars, or wisdom teeth, is another cause of reflex phenomena induced by the teeth most important to be not overlooked.

Allusion has been made to the exceedingly small particles of poisonous drugs gradually worn away from plates and fillings, and to the almost inappreciable reflex irritation from slowly acting pathological processes set in motion by the teeth; these, it may be said, are the more dangerous when their existence is not suspected. Such plates as are mentioned above, the writer has seen abraded by use until worn through.

It is believed that after a candid review of this subject it will be undenied that affections of the ear are not unfrequently induced by pre-existing pathological changes in or about the mouth. It naturally follows that judicious treatment necessitates a careful appreciation of these etiological factors. It is not, however, in the province of this essay to discuss the treatment of oral diseases, and as to the management of the ear itself, when affected by reflex influences, the subject is too important for the limits to which the unexpected length of this paper warns the author that it must be confined. He will, therefore, defer the subject of treatment until another occasion.

In the foregoing paper it has been the writer's aim to touch on the more common of the oral affections that exert an influence on diseases of the ear, knowing that any account of the pathology of the buccal cavity and its contents approaching completeness, would carry him beyond the scope of this essay.

Regarding the influence known as reflex action, by means of which we are enabled to account for pathological changes in the ear which were hitherto veiled in mystery, it must be said that our knowledge of its phenomena is as yet lacking in completeness, but enough is known, through the confirmation of clinical experience, to vastly increase our knowledge of the etiology of disease.

The writer feels that this important subject has been treated by him somewhat imperfectly, but as fully as his experience thus far warrants. The important practical bearings of the matter herein discussed must be his excuse for bringing it at this time to the notice of the profession.

BIBLIOGRAPHY.—*Du Verney*, Tractatus de Organo Auditus, Norimbergæ, 1684. *Ambroise Paré*, Œuvres d', Paris, 1628. *Austin Flint, Jr.*, Physiology of Man—Nervous System, New York, 1873. *M. Foster*, A Text-book of Physiology, 2d edition, London, 1878. *E. H. Triquet*, Traité Pratique des Maladies de l'Oreille, Paris, 1857. *Burnett*, A Treatise on the Ear, Philadelphia, 1877. *Curtis*, Treatise on the Physiology and Diseases of the Ear, London, 1819. *D. B. St. John Roosa*, A Practical Treatise on the Diseases of the Ear, New York, 1873. *Hilton*, Rest and Pain, 2d edition, New York, 1879. *Saunders*, The Anatomy of the Human Ear, etc., Philadelphia, 1821. *Joseph Williams*, Treatise on the Ear (Prize Essay), London, 1840. *William Dufton*, The Nature and Treatment of Deafness and Diseases of the Ear, etc., London, 1844. *Yearsley*, Deafness Practically Illustrated, etc., 6th edition, London, 1863. *Wilde*, Practical Observations on Aural Surgery, etc., Philadelphia, 1853. *Cooper*, Clinical Lectures upon Inflammation and Other Diseases of the Ear, London, 1878. *Gray*, Anatomy, Philadelphia, 1870. *Kempton*, Sympathetic Nervous Affections connected with the Teeth (From the Transactions of the College of Dentists of England for 1861), London. *Abbott*, Caries of the Human Teeth, read before the New York Odontographical Society. *Burq*, Étude Expérimentale sur la Metalloscopie et la Métallothérapie. *MM. Charcot, Luys, et de Dumontpallier*, Rapports faits à la Societé de Biologié (1877–1878), Paris, 1879. *Woakes*, On Deafness, Giddiness and Noises in the Head, London, 1879. *Phillips*, Materia Medica and Therapeutics; Vegetable Kingdom, New York, 1879. *Heath*, Injuries and Diseases of the Jaws, London, 1868. *Wedl*, The Pathology of the Teeth, Philadelphia, 1872.

ARTICLE II.

TYPHO-MALARIAL FEVER, THE SO-CALLED "MOUNTAIN" FEVER OF THE ROCKY MOUNTAIN REGION.

By JOHN VAN RENSSELAER HOFF, A.M., M.D., Assistant Surgeon U. S. Army.

IF there be a disease peculiar to the Rocky Mountain system, its investigation and accurate determination become each day of greater public importance, for even now the waves of civilization are lapping to the base of the Rockies, and soon its swelling tide will overflow the whole region. From time to time there have appeared in American medical periodicals articles under the caption "Mountain Fever," giving description of a febrile disease of somewhat peculiar character, which apparently is indigenous to the country vaguely denominated the Rocky Mountain region. Owing doubtless to the sparseness of population, the rarity of the disease, and, not least, the fact that the pioneers of our profession in this extreme western country are, as a rule, workers, not recorders, the literature of the subject is extremely meagre. The weight of authority, so far as evidence is obtainable, seems to be in favor of a malarial causation. Assistant-Surgeon Charles Smart, U. S. Army, in his very instructive paper on "Mountain Fever and Malarious Waters," says:[1] . . . "Mountain fever is not dependent upon any peculiar mountain miasma, but is a malarial remittent with adynamic tendencies." He further says:[2] "If . . . disease be permitted to run unchecked for a few days the patient falls into a condition undistinguishable from typhoid, and which often proves fatal," etc. Surgeon E. P. Vollum, U. S. Army, writes:[3] "It is a malarial fever commencing as an intermittent, passing on to a remittent, then into a typhoid condition."

Surgeon J. L. Town, and Assistant-Surgeon J. D. Hall, U. S. Army, state that at Fort Shaw, Montana,[4] "remittent and typho-malarial, and probably enteric fevers, are not infrequent in the spring and fall; . . . these, in the parlance of the country, are termed mountain fevers indiscriminately." Other medical officers with whom we have had opportunity to consult, express the opinion that the disease is of remittent character, of malarial origin; an opinion which seems to be very generally acquiesced in, judging from the comparatively large number of cases of remittents reported from posts within the Rocky Mountain belt. So far, then, as has been determined, we recognize under the term "mountain" fever a disease beginning as an intermittent, continuing (?) as a remittent, and ending in typhoid, or, as Dr. Smart[5] formulates it, 1st, "a primary stage of one, two, or more weeks during which the individual is more or less oppressed by the influence of the *materies morbi;* 2d, the development of fever, more or less marked, and more or less rapid in its course, with irregular remissions, and much more mental depression and muscular prostration than the patient's pulse and temperature would prepare the observer to find;" 3d, "a typhoid stage, marked by prostration, emaciation, low delirium, and coma vigil."

With a view to assisting in the accurate determination of a question which is certainly now *sub judice*, and regarding which positive conclusion can be reached only through carefully recorded clinical histories and anatomico-pathological examinations, we present the notes of five cases of so-called "mountain" fever which fell under observation at Fort Fetterman, Wyoming, in the autumn of 1878. Late in the spring of 1878, eight companies of cavalry, four from stations on Union Pacific Railroad, and four from post on extreme frontier, rendezvoused at Fort McKinney, Wyoming, thence marched to Clear Creek, Wyoming, and went into permanent camp. We are indebted to Dr. A. J. Gray, U. S. A., chief medical officer of the column, for the following:—

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[1] American Journal of the Medical Sciences, January, 1878.

[2] Circular No. 8, War Dep't, Surgeon-General's Office, 1875.

[3] Idem. [4] Idem.

[5] American Journal of the Medical Sciences, January, 1878.

"Our command, consisting of two battalions 5th Cavalry, numbering in all about five hundred men, took the field May 24, 1878, 'as a party of observation' in the Powder River country. Not a man was sick in starting. The command was splendidly equipped; ample and suitable clothing and tentage, and abundant rations. The *morale*, moreover, could not have been better. The first permanent camp was reached June 14. It was located on the Clear Fork of Powder River, three miles from the eastern base of the Big Horn Mountains, at the point where they reach their highest elevation, viz., 12,000 feet, and are covered by perpetual snow. The camp was on a grassy plateau, twenty-five feet above the level of the stream, with sufficient incline to secure free surface drainage, the soil being a gravelly drift without alluvium. Clear Fork, from which the water-supply was furnished, takes its rise in the 'Ice Lakes' (glaciers), at the base of the granite crest of the mountains, and flows rapidly by many small streams for ten miles through a dense pine forest, all the streams then uniting to pass through a gorge or narrow cañon, from which it rushes over rocks and boulders, making one continuous line of foam five miles to our camp, where the stream has an average width of twenty feet, and depth of eighteen inches. The water is soft, clear, and pleasant to the taste, except that late in the season there was a suspicion of vegetable infusion. The temperature of the water was at no time above 50° Fahr. The command remained in this camp until July 15—one month—during which a few cases of intermittents appeared, in all of which there was a history of previous malarial toxemia. There were many cases of disease of the digestive organs, responsibility for which, in my opinion, largely rests with the sutler. There were also a few cases of acute rheumatism.

"The second camp was on Rock Creek, four miles north of the previous site, and differing therefrom in no important characteristic, nor was there any noticeable change in the sick report. The duties of the men were light. Scouting parties were sent out during the summer in various directions, composed of from one to four companies. There were occasional drills, and the usual guard duty. The atmospheric temperature was equable, and never oppressive. Showers were of almost daily occurrence through the entire season.

"On the 5th of September orders were received to cross the mountains to the southwestward, to intercept hostile Indians coming down from the Yellowstone National Park. This movement necessitated a reduction of all extra clothing and rations, and the use by the men of the so-called 'shelter' tent, which falls far short of affording protection against severe weather, such as was experienced in this movement. On the seventh the eastern crest was crossed, and camp made in a well-watered natural clearing at an altitude of about 9000 feet. Toward evening a cold rain began to fall, which at 2 o'clock A. M. turned to snow, and continued all through the next day's march, falling to the depth of twelve inches or more on a level. The storm continued during the night of the 8th, but we left it early in the evening by coming down out of it into clear weather, on the west side of the range, into the valley of Painted Rock River. During the 9th our march lay down the valley of the stream, or rather across its numerous tributaries, all turbid and swollen from the melting snow, which had just fallen on the mountains, and which, let me say, was the first snow since the previous spring. On the 10th and 11th the command crossed the Owl Creek Mountains, also covered with snow recently fallen, and on the 12th reached the Wind River. Since the 7th the command had marched over high mountain ranges, by an unfrequented trail, where there was no possibility of encountering the results of animal decomposition, and where there were no marshes, and little vegetation of any kind aside from the pine forests. The water-supply had all the time been from the melting snow. The health of the men continued good until the night of the 12th, when the first case of intermittent developed in a strong young soldier of good habits (Case IV.). The trouble yielded readily to large doses of quinia-sulphate, and he was able to resume duty on the 16th.

"Camp Brown, which the column reached September 14, is situated at the eastern base of the Wind River Mountains, and is surrounded by no unfavorable sanitary condition; on the contrary, the physical characteristics are eminently favorable to healthfulness, which is abundantly attested by the condition of the garrison stationed there. The command, to which the writer was attached, remained at this place five days, during which occurred three peculiar cases of sickness, one being that before mentioned, and the two others men who were left at the hospital at Camp Brown, when we started on our homeward march, September 19. On the morning of the 20th, a fourth case of this disease presented, and the subject sent back to hospital. These cases I have not since heard from. Our return march was by the well-known Sweetwater trail, and was made under conditions in every way favorable to healthfulness; yet several cases of the disease developed during the march to Fort Fetterman.

"These cases all presented the same general phenomena in the beginning. Invariably the first complaint was that of feeling cold, and 'aching all over.' Then there was loss of appetite, thickly coated tongue. and constipated bowels. The disease was in no instance ushered in with a well-marked chill, and during the first twenty-four hours the fever was always light; but there was mental obscuration, sometimes delirium, and more or less inertia, the subjects seeming not to care whether they lived or died, or what was done with or for them. The patients always admitted a feeling of distress, but never could localize it, except in one case (the man who subsequently died at Fort Fetterman, who complained greatly of pain in his head and the 'back of his neck'). The fever once developed, never after wholly left the patient, but exhibited a decided daily exacerbation, beginning with *chilliness* for a period of half an hour or so, accompanied by cold, clammy sweat, and followed by an intensely hot skin, with small and rapid pulse. These exacerbations generally continued about eight hours, sometimes longer, and then would follow a period of eight or ten hours of lower temperature and comparative freedom from discomfort, during which sleep was possible. There was an increasing, but not a great degree of prostration, as every man was able to ride his horse during the day's march of eighteen to twenty-five miles, and continued to do so daily without assistance until Fort Fetterman was reached. There were wanting the distinctive symptoms characteristic of typhoid, and yet quinia seemed to have no effect to prevent or control the daily returns of the high fever, though administered in large doses."

The command reached Fort Fetterman Sept. 28th, and Dr. Gray transferred to this Hospital the following cases, the most serious of those under treatment.

Cases I. and III.—Tertian Intermittent Fever.

Case II.—Remittent Fever.

Cases IV. and V.—Quotidian Intermittent Fever.

CASE I.—Aged 22; family history good; strong physique; never had any serious illness; temperate habits; first taken sick September 6th, 1878 (while en route to Camp Brown, Wyoming) with severe headache, fever and pain in abdomen; no chill or epistaxis; had fever for short time daily for five or six days; upon reaching Camp Brown, felt much better, but febrile condition continued, and, with resumption of march, headache again became severe. Treatment, quinia. Admitted to hospital September 29th; complained of no pain, but felt debilitated; was anæmic, though in good flesh and spirits; conjunctiva and skin clear; hearing normal; tongue heavily covered with whitish glazed coat, which, disappearing at tip and edges, left a clearly-defined pinkish border; thoracic and abdominal viscera normal; no tenderness over liver, spleen, or caput coli, and no eruption on body; pulse full and soft; urinary secretions normal; appetite good. We regarded this case as a mild though typical form of "mountain" fever, and, that its symptoms might not be modified by medication, the treatment was purely placeboic—Aquæ lavandul., ℥ss, three times a day.

The history of the case presents nothing of interest other than that of simple continued or sub-continued fever. The temperature chart is shown in the accompanying plate. There was a daily sweat, but no chill, and the sweat was not very copious; no pain in head (save for a day or so after entering hospital) or abdomen, and at no time after admission any tenderness of spleen or liver, and no cutaneous eruption. The bowels were slightly constipated, but so slightly that cathartics were found necessary only twice during the time the case was under observation.

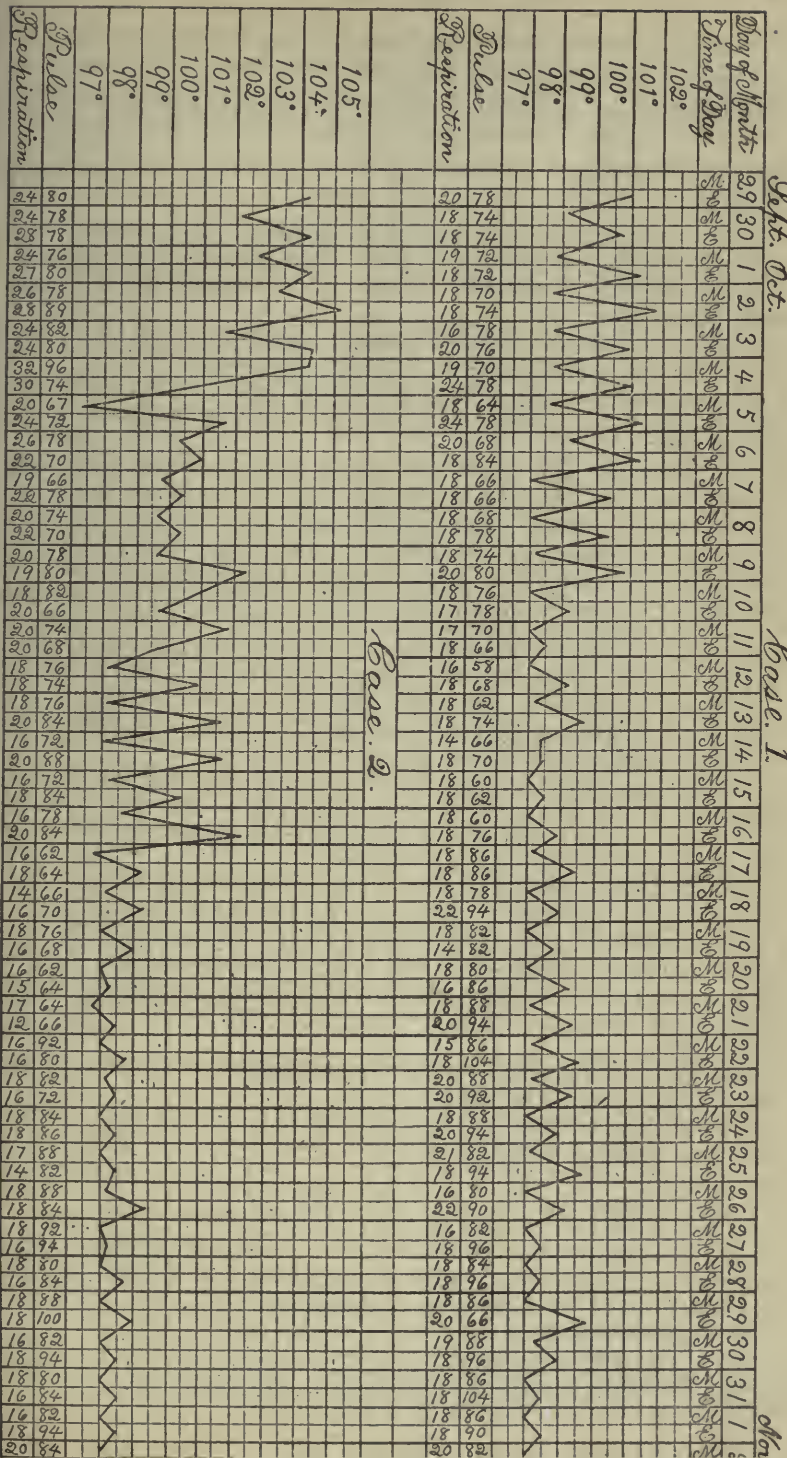
CASE II.—Aged 30; strong constitution; no history of previous illness; of temperate habits; was taken sick September 20th, upon leaving Camp Brown; complained of headache, anorexia, general debility, with constipation; had daily chill, fever, and sweat until 28th, when fever became continued; had not been ill before during campaign, and never had intermittent fever. Admitted to hospital September 29th. Patient fairly well nourished; of spare habit; conjunctiva injected; countenance flushed, skin dry; lips swollen and cracked; tongue thick, swollen, fissured, and heavily coated at centre, clear and red at tip and edges; mouth filled with thick viscid saliva; taste bad; breath offensive; thorax clear on percussion; complains of pain at lower portion of both lungs on taking full breath; respiration rough, with mucous and subcrepitant râles; expectoration stringy and slightly streaked with blood; liver and spleen somewhat enlarged and painful on palpation; abdomen generally tender; micturition painful; urine scanty and high colored; bowels constipated; mind clear; cephalalgia excruciating; pain referred principally to occiput, seemed to extend downward, causing patient to assume characteristic posture of cerebro-spinal meningitis; hearing obtunded.

29*th*. Potassii bromid. et chloral hydrat., āā gr. xv at once, to be followed by Magnes. sulph., ℥ss, and simple enema: milk diet.

30*th*. Passed restless night; headache continued; no appetite; bowels moved freely. Ipecac., gr. xv every 3 hours. This remedy was used purely tentatively.

The temperature record is given in the accompanying plate.

Having several cases under treatment at the same time, we determined to study the action of different remedies to ascertain as certainly as pos-


Sept. Oct.
No
Case. 1.
Case. 2.
Day of Month
Time of Day
102°
101°
100°
99°
98°
97°
Pulse
Respiration
105°
104°
103°
102°
101°
100°
99°
98°
97°
Pulse
Respiration
29 30 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 1
M E
20 78 | 24 80
18 74 | 24 78
18 74 | 28 78
19 72 | 24 76
18 72 | 27 80
18 70 | 26 78
18 74 | 28 89
16 78 | 24 82
20 76 | 24 80
19 70 | 32 96
24 78 | 30 74
18 64 | 20 67
24 78 | 24 72
20 68 | 26 78
18 84 | 22 70
18 66 | 19 66
18 66 | 22 78
18 68 | 20 74
18 78 | 22 70
18 74 | 20 78
20 80 | 19 80
18 76 | 18 82
17 78 | 20 66
17 70 | 20 74
18 66 | 20 68
16 58 | 18 76
18 68 | 18 74
18 62 | 18 76
18 74 | 20 84
14 66 | 16 72
18 70 | 20 88
18 60 | 16 72
18 62 | 18 84
18 60 | 16 78
18 76 | 20 84
18 86 | 16 62
18 86 | 18 64
18 78 | 14 66
22 94 | 16 70
18 82 | 18 76
14 82 | 16 68
18 80 | 16 62
16 86 | 15 64
18 88 | 17 64
20 94 | 12 66
15 86 | 16 92
18 104 | 16 80
20 88 | 18 82
20 92 | 16 72
18 88 | 18 84
20 94 | 18 86
21 82 | 17 88
18 94 | 14 82
16 80 | 18 88
22 90 | 18 84
16 82 | 18 92
18 96 | 16 94
18 84 | 18 80
18 96 | 16 84
18 86 | 18 88
20 66 | 18 100
19 88 | 16 82
18 96 | 18 94
18 86 | 18 80
18 104 | 16 84
18 86 | 16 82
18 90 | 18 94
20 82 | 20 84

sible which offered the nearest approach to a specific in this disease. We had reached the conclusion that quinia was the remedy *par excellence*, simply because we had used it exclusively, but, for want of experience with other remedies, were in doubt whether or no this one belonged to that large class of *post hoc, ergo propter hoc* remedies, so frequently appealed to.

Oct. 1. No perceptible improvement; unable to sleep; complains of pain, referred principally to occiput; slight nausea from medicine; no emesis; bowels constipated; no appetite. Ipecac., gr. xv three times a day, magn. sulph., ℥ss at once.

2*d*. Slept a little during night; headache continues; bowels open; urine sp. gr. 1024, acid, slight trace of chlorides; no albumen.

3*d*. Comfortable night; tongue still heavily coated and swollen; teeth covered with sordes; mouth foul; breath very offensive; complains of pain all over body.

4*th*. Bowels moved spontaneously during night; urinated freely; pain in head, lungs, and abdomen less severe; profuse sweat from 6 to 8 P.M.; no chill; oil-silk jacket to chest; quiniæ sulph. gr. xv, acid. hydrobromic. ʒss, at 11 A. M. and 8 P. M.; slop diet; urine, sp. gr. 1022, acid, no albumen, chlorides present; patient flighty. This was the seventh day since last chill. We had continued the use of ipecac. with very slight or no perceptible effect upon the fever, and fearing further experiment, administered quinia, with decided advantage. Up to this time, the evening temperature ranged above 104° F. On the 4th inst., 7 A. M., it stood at 104$\frac{2}{5}$°; at 7 P. M. 100$\frac{2}{5}$° F., with decided improvement in all symptoms. The oil-silk jacket was ordered to protect thorax from chill, patient frequently throwing covering from him during night.

5*th*. No pain; has been very comfortable for twenty-four hours; mind collected; bowels open; urinary secretion free; no eruption on body; tongue very thickly coated and slightly yellow; expectoration stringy, but not rusty; breath very foul; appetite poor.

6*th*. No change, except profuse sweating from 1 P. M. till midnight; quiniæ sulph. gr. xvi, acid. hydrobromic. ʒj at 11 A. M. and 8 P. M.

7*th*. Sensation of heat all over body; otherwise very comfortable; no indication of rash; tongue thick and flabby, with heavy whitish coat, but always clear at tip and edges; expectoration whitish and stringy, essentially that of bronchitis, now without capillary complications; no pain upon inspiration.

8*th*. Appetite improving; otherwise no change; has been entirely rational since 4th inst., and seems in good spirits.

9*th* and 10*th*. General symptoms unchanged; bowels and kidneys acting regularly; temperature erratic, with upward tendency. 9*th*. Quiniæ sulph. gr. xv, acid. hydrobromic. ♏xv at 9 P. M. 10*th*. Quiniæ sulph. gr. xv, acid. hydrobromic. ♏xxx at 11 A. M. and 9 P. M.

11*th*. Comfortable night; felt chilly during morning; no eruption on skin; cold sponge-bath for 20 minutes, when temperature exceeds 103° F. (one bath given at 12 M.); perspired freely from 6 to 9 P. M., and continued to perspire less freely through night; urine, sp. gr. 1028, acid, no albumen, chlorides present.

12*th*. Very weak, but feels generally better; emunctories working freely; tongue clearing off; expectoration decreasing; no pain; no eruption; quiniæ sulph. gr. xv, acid. hydrobrom. ♏xv at 9 P. M.

13th to *15th*. No marked change; some perspiration during night of 13th, but no chill; tongue still heavily coated; vini albi ℥iv during day (continued from 13th to 22d). (*14th* inst.) Quin. sulph. gr. xv, acid. hydrobrom. ♏xv at 9 P. M. (*15th* inst.) Quin. sulph. gr. x, acid. hydrobrom. ♏xv at 9 P. M.

16th. After a quiet night, at 9 P. M. had severe chill, which lasted fifteen minutes, followed by fever reaching 106⅕° F., and gradually declining; there were no symptoms other than those observed in simple intermittent. Urine, sp. gr. 1020, *alkaline*, chlorides present in full quantity; quin. sulph. gr. xv, acid. hydrobrom. ♏xv at 10.30 A. M., and 9 P. M.

17th. Slept well and feels better; appetite improving; tongue still somewhat coated; expectoration slight; no fetor of breath; no bad taste in mouth; bowels constipated; magn. sulph. ℥ss at 6.30 P. M.

18th to *Nov*. 2. During this time, convalescence proceeded to complete recovery. Quinia was administered sufficiently often to keep system under its influence until 22d inst., at which time all medication was stopped. Specific gravity of urine descended to 1013, but albumen was at no time present. Convalescence, once established, rapidly proceeded to recovery, and patient seemed to have regained full strength several days before opportunity offered to join his proper command. Lung complications (for we take it that the pulmonary difficulty was simply a complication, not a necessary concomitant) rapidly disappeared with increasing strength, and at date of return to duty, patient to all appearance was entirely well.

Case III.—Aged 17 years; medium constitution; general health good. First taken sick crossing Big Horn Mountains (about September 8th) while exposed to snow-storms; complained of soreness all over body and stiffness in joints; some headache; had two or three chills before reaching Camp Brown, Wyoming, but continued to perform full duty until two days after leaving, at which time he became worse; had a severe chill, followed by fever and sweat; taking tertian form until 27th inst., when fever became continuous; never before had chills and fever; during summer was not ill; had no diarrhœa, on the contrary, was constipated; while marching across mountains drank a great deal of water, without effect on bowels; appetite continued good; mind rational; had cold in head, but no trouble with lungs; noticed red pimples on chest and abdomen two days before reaching Camp Brown, which disappeared in two or three days; felt badly for several days before first chill; did not have nose-bleed. Admitted to hospital September 29th, P. M.; face slightly flushed; conjunctiva clear; tongue heavily covered in middle, clear and pink at tip and edges; coating slightly yellowish (tobacco stain?); thorax clear on percussion; respiration normal vesicular; no pain upon full inspiration; bowels constipated; slight tenderness of abdomen, less marked over region of liver; heart normal; pulse full; skin dry; no eruption on body; complains of headache and thirst; otherwise comfortable; appetite good.

29th. Magn. sulph. ℥ss and simple enema at once, followed by potassii bromid. et chloral hydrat. āā gr. xv; slop diet. P. M., T. 104.2° F., P. 87, R. 28.

30th and *Oct*. 1. General condition unchanged; bowels moved freely; headache disappeared; complained of hunger. Sept. *30th*. A. M., 103.2° F., P. 88, R. 26; P. M., 104.4° F., P. 88, R. 27; Oct. 1. A. M., 103.2° F., P. 82, R. 24; P. M., 104.4° F., P. 88, R. 26. Urine, quantity about normal; sp. gr. 1021, alkaline, no albumen, chlorides present; liq. ammon. acetat. ℥ss every 3 hours (an experiment).

2d. Sleepless night; tongue clearing; face flushed; fever high; complains of no pain, and seems bright and perfectly rational. A. M., 101.4° F., P. 78, R. 25; P. M., 104.6° F., P. 84, R. 26.

3d. Growing weaker, but makes no complaint; appetite still good; bowels constipated; fever very high; continue liq ammon. acetat., quiniæ sulph. ʒss, acid. hydrobrom. ♏xxx, in two doses at 7 P. M.; magn. sulph. ℥ss in morning. A. M., 102.8° F., P. 86, R. 25; P. M., 104.4° F., P. 90, R. 24.

4th. It will be observed that at 7 P. M., 3d inst., the thermometer indicated a temperature of 104.4° F., at which time a large dose of quiniæ sulph. was given. Passed a comfortable night; quite drowsy in morning; tongue clearing; breath offensive; tenderness of abdomen diminishing; appetite still good; urine, sp. gr. 1012, acid, no albumen, chlorides in increased quantity. A. M., 99.2° F., P. 72, R. 22; P. M., 102.2° F., P. 78, R. 28.

5th to *7th.* No marked change. *5th.* Bowels being constipated, a simple enema was ordered 11 A. M., followed by small evacuations; in evening had quiniæ sulph. ʒss, acid. hydrobrom. ʒj, in two doses at 7 P. M. *6th.* Magnesia sulph. ℥ss. *7th.* Quiniæ sulph. gr. xv, acid. hydrobrom. ʒss at 10 A. M. and 9 P. M. *5th.* A. M., 101.2° F., P. 80, R. 26; P. M., 103.4° F., P. 88, R. 26. *6th.* A. M., 100.4° F., P. 78, R. 22; P. M., 103.2° F., P. 84, R. 28. *7th.* A. M., 102.6° F., P. 82, R. 23; P. M., 104.4° F., P. 90, R. 28.

8th to *10th.* In spite of high temperature, appetite continues reasonably good: complains of the insufficiency of gruel and broth diet; says he is always hungry. *8th.* Perspired considerably during morning; bowels were open; kidneys acting freely; chlorides present in urine in full quantity. A. M., 101.4° F., P. 80, R. 22; P. M., 104.2° F., P. 88, R. 28. *9th.* Quiniæ sulph. gr. xv, acid. hydrobrom. ♏xv, at 11 A. M. and 9 P. M. A. M., 102.6° F., P. 88, R. 28; P. M., 104.2° F., P. 90, R. 28. *10th.* A. M., 101.2° F., P. 96, R. 24; P. M., 104.2° F., P. 88, R. 24.

11th to *12th.* Tenderness of abdomen disappeared; has grown very weak, but mind remains clear, and spirits good; tongue less coated. *11th.* Quiniæ sulph. gr. xv, acid. hydrobrom. ♏xv, at 11 A. M. and 9 P. M.; cold sponge-bath twenty minutes, when temperature exceeds 103° F., to be repeated every half hour, *pro re nata* (bathed three times). Vini albi ℥iv during day. (*12th* to *19th.*) *11th.* A. M., 103° F., P. 94, R. 24; P. M., 103.8° F., P. 84, R. 26. *12th.* A. M., 100.4° F., P. 86, R. 24; P. M., 103.2° F., P. 82, R. 28.

13th. Comfortable night. Tongue characteristically coated; breath offensive; bowels constipated: a papular eruption on chest and abdomen of bright-red colour, painless, and disappearing on pressure (this remained for many days, and the papules multiplied in quantity); sweating profuse 6.30 to 7.15 P. M.; bathed 1 P. M.; magn. sulph. ℥ss 7 A. M.; quin. sulph, gr. xv, acid. hydrobrom. ♏xv at 10 A. M. and 9 P. M. Continue wine. A. M., 100.6° F., P. 88, R. 25; P. M., 103.6° F., P. 90, R. 24.

14th. Slept well through the night; seems bright; sweated copiously; bathed 1, 4, and 7 P. M. Quinia sulph. gr. xv, acid. hydrobrom. ♏xv at 9 P. M. Continue wine. A. M. 98.4° F., P. 82, R. 24; P. M., 104.4° F., P. 98, R. 24.

15th. Sweated for one and one-half hours during night very freely; no tenderness of abdomen; gurgling in right iliac fossa perceptible for first time; somewhat flighty. Bathed 1 P. M.; urine sp. gr, 1016, acid, no albumen, chlorides present in full quantity; bowels constipated; tongue clearing up. To continue wine, and have magn. sulph. ℥ss A. M. A. M., 100.8° F., P. 86, R. 24; P. M., 104.4° F., P. 96, R. 24.

16th to *18th*. No change in general features. 16th. Bowels moved freely during the night; sweating commenced 5.30 P. M.; continued for several hours. Quiniæ sulph. gr. xv, acid. hydrobrom. ♏xv 10.30 A. M. and 9 P. M. A. M., 99.6° F., P. 80, R. 22; P. M., 105.2° F., P. 102, R. 26. 17th. Profuse sweat from 2 till 5 A. M.; sponged at 1 and 4 P. M. A. M., 99.8° F., P. 94, R. 22; P. M., 104.2° F., P. 94, R. 24. 18th. Quiniæ sulph. gr. xv, acid. hydrobrom. ♏xv at 10.30 A. M. and 9 P. M. Wine as usual. Sponged 7 A.M, 1, 4, 7, and 8.30 P. M. A. M., 102.6° F., P. 96, R. 32; P. M., 105.2° F., P. 102, R. 28.

19th. Slept well until 4.30 A. M., then had a severe chill which lasted for an hour. Tongue clearing; no sordes on teeth; very weak, with excessive fever; heart action feeble. Frozen cloths to chest and abdomen; ice cap to head. Sp. vini gallici ℥iv in milk-punch during day. Tinct. digitalis ♏x at 11 A. M. Omit wine. A. M., 105.6° F., P. 132, R. 28; P. M., 101.8° F., P. 114, R. 28.

20th. Had chill from 1 to 2 A. M., followed by high fever; began to sweat at 8.30 A. M., and continued all day; bowels moved freely; stools small and light coloured; frozen cloths applied from 7 to 8 A. M. Quiniæ sulph. gr. xxx, acid. hydrobrom. ♏xxx in two doses at 11 A. M. Omit digitalis; continue brandy. Urine sp. gr. 1015, alkaline, no albumen, chlorides a trace, high coloured. A. M., 104.6° F., P. 128, R. 30; P. M. 97.6° F., P. 102, R. 20.

21st to *24th*. During this time the fever remained comparatively low; patient each day perspired profusely; chlorides in urine increased from a trace to nearly normal quantity. On *21st*, quiniæ sulph. ʒss, acid. hydrobrom. ʒss in two doses 8.30 P. M. A. M., 98.2° F., P. 100, R. 24; P. M., 101.8° F., P. 106, R. 26. *22d*. Quiniæ sulph. gr. xv, acid. hydrobrom. ♏xv at 9 P. M. A. M., 98.6° F., P. 90, R. 22; P. M., 101.2° F., P. 100, R. 24. A. M., 99.4° F., P. 85, R. 22; P. M., 101.6° F., P. 92, R. 24. *24th*. Quiniæ sulph. gr. xxx, acid. hydrobrom. ♏xxx in two doses 7.45 A. M.; atropiæ sulphat. gr. $\frac{1}{40}$ at 8 P. M. Brandy continued. A. M., 100.4° F., P. 86, R. 26; P. M., 101.4° F., P. 100, R. 24.

25th. Had a chill from 5 to 8 A. M.; complained of great thirst; ice cap to head; frozen cloths to chest and abdomen 1 to 4 P. M. Continue brandy; bowels open. A. M., 103.4° F., P. 118, R. 26; P. M., 102.8° F., P. 114, R. 26.

26th. Comfortable night; has good appetite; no pain; no tenderness of abdomen; perspired freely from 8 A. M. to 6 P. M. Had a severe chill at 6.40 P.M., lasting twenty-five minutes, followed by fever. To continue brandy. Atropiæ sulph. gr. $\frac{1}{40}$ morning and night. Quiniæ sulph. gr. xxx, acid hydrobrom. ♏xxx in two doses at 7 P. M. A. M., 98° F., P. 86, R. 20; P. M., 103.2° F., P. 124, R. 27.

27th to *November* 2. A period of almost complete defervescence, during which patient gained strength and improved in every particular; his appetite, as always, continued good, and mind clear, though body weak and spirits occasionally depressed. 27th, was wakeful and thirsty during early night, but slept soundly latter part and during morning. *28th*. Sweated copiously from 6 to 7.30 P. M.; quiniæ sulph. gr. xv, acid. hydrobrom. ♏xv at 10.20 A. M. and 5 P. M.; continue brandy and atropia. *29th* and *30th*. Improvement continued; had (30th) quiniæ sulph. gr. x, acid. hydrobrom. ♏x at 7 A. M. On the *31st* there was some sweating during day; patient had quiniæ sulph. gr. x, acid. hydrobrom. ♏x at 11 A. M. and 9 P. M. On Nov. *1st* and *2d* there was also sweating. *2d.* Quinia sulph. gr. x, acid. hydrobrom. ♏x at 8 A. M. *27th*, A. M., 99.2° F., P. 98, R. 24; P. M., 99° F., P. 86, R. 20. *28th*, A. M., 98.2° F., P. 61, R. 22; P. M., 100.4° F., P. 82, R. 16. *29th*, A. M., 98.4° F., P. 76, R. 18; P. M., 99.4° F., P. 92, R. 22. *30th*, A. M., 98.8° F., P. 84, R. 18; P. M., 99.2° F., P. 78, R. 22. *31st*, A. M., 99.2° F., P. 84, R. 16; P. M., 98.4° F., P. 90, R. 24. Nov. *1st*, A. M., 98.4° F., P. 82, R. 20; P. M., 99.6° F., P. 84, R. 24. *2d*, A. M., 99.2° F., P. 84, R. 22; P. M., 99.6° F., P. 96, R. 20.

3d to *8th*. Marks a gradual exacerbation of fever, the morning temperature being normal, or a little above, fluctuated through day, but showing always a quite markedly higher evening register. The specific gravity of urine gave very little indication of severity of fever, and chlorides remained about normal, as had been the case except during the first days of the disease. There was no complaint of pain, no mental hebetude during this time, and appetite continued remarkably good. *3d.* Quiniæ sulph. gr. v, acid. hydrobrom. ♏x at 9.30 A. M. and 9 P. M. *4th.* Some sweating during day. Quiniæ sulph. gr. v, acid. hydrobrom. ♏v at 9.30 A. M. and 5 P. M. *5th.* Sweated at 7 P. M. Quiniæ sulph. gr. x, acid. hydrobrom. ♏x 7.30 A. M. *6th.* No change, except an appreciable increase in temperature. Quiniæ sulph. gr. xx, acid. hydrobrom. ♏xx at 9 P. M. *7th.* Passed good night; complained of no pain; appetite good; no thirst. Quiniæ sulph. gr. x, acid. hydrobrom. ♏xx at 11 A. M. and 9 P. M. *8th.* Fever increasing; has slight headache. Quinia sulph. gr. xv, acid. hydrobrom. ♏xv at 9 P. M. Frozen cloths to chest and abdomen, and ice cap to head from 1.30 till 9 P. M. (intermitting every 20 minutes). *3d*, A. M., 99.2° F., P. 84, R. 18; P. M., 100.2° F., P. 94, R. 20. *4th*, A. M., 99.6° F., P. 92, R. 22; P. M., 101.4° F., P. 106, R. 26. *5th*, A. M., 101.4° F., P. 122, R. 22; P. M., 102.6° F., P. 112, R. 24. *6th*, A. M., 98.8° F., P. 102, R. 24; P. M., 102.6° F., P. 112, R. 26. *7th*, A. M., 100.2° F., P. 112, R. 26; P. M., 103.2° F., P. 118, R. 26. *8th*, A. M., 102° F., P. 108, R. 22; P. M., 104.8° F., P. 126, R. 26.

9th. Very restless through night; mind clear, and appetite, as usual, good; bowels open; urinary secretions normal; fever running high; no chill; no sweat; ice to head, and frozen cloths to chest and abdomen almost continuously from 10 A. M. till 7 P. M. At 3 P. M. complained of pain in abdomen, not further localized, which was relieved by sinapism and sol. morph. sulph. (gr. xvj to ℥j) ♏v hypodermically, and disappeared in an hour. Urine sp. gr. 1018, acid, no albumen, chlorides normal. A. M., 102.6° F., P. 112, R. 24; P. M., 105.6° F., P. 124, R. 23.

10th. Slept well; continues to enjoy food; no delirium; ice cap and frozen cloths applied at usual intervals from 1 to 7.30 P. M., during which time patient complained of headache. Quiniæ sulph. gr. xxx, acid. hydrobrom. ʒss at 8 A. M.. A. M., 104° F., P. 112, R. 23; P. M., 102.8° F., P. 110, R. 24.

11th. Rested comfortably; bowels open; urinated at regular intervals; ice cap and frozen cloths applied, with stated intermissions, from 10 A. M. till 12.30 P. M., 4 to 6.30 P. M. Epistaxis frequently throughout day (a new feature in case). Quiniæ sulph. gr. xxx, acid. hydrobrom. ♏xxx at 10 A. M. Urine, sp. gr. 1021, alkaline, no albumen, chlorides normal. A. M., 103.4° F., P. 110, R. 26; P. M., 99.8° F., P. 112, R. 18.

12*th.* Slept most of night; feels very comfortable, and has not lost zest for food. At 3 P. M. complained of stomach ache, relieved by sinapism. Diet restricted entirely to gruel, soups, etc., with eggs (cooked rare). Continued to take sp. vini gal. ℥iv daily in form of milk-punch. Though body had become emaciated, considerable strength remained—sufficient to enable patient to move with slight assistance from one bed to another. Quiniæ sulph. gr. xxx, acid. hydrobrom. ♏xxx at 8.30 P. M. A. M., 100.4° F., P. 110, R. 20; P. M., 103.8° F., P. 126, R. 23.

13*th.* Patient for first time complains of fever; says he feels "hot," though he reports a comfortable night. Fever is telling upon strength; heart action rapid and somewhat irregular; pulsation weak. Ice cap and frozen cloths applied at usual intervals from 10 A. M., to 9 P. M.. Tr. digitalis et tr. ferri chlor. āā ♏x four times daily. Brandy increased to ℥viij in twenty-four hours. Urine, sp. gr. 1025, alkaline, chlorides present. A. M., 102° F., P. 118, R. 22; P. M., 105.2° F., P. 128, R. 30.

14*th.* Pulse very rapid and weak; heart's impulse hardly perceptible; mind perfectly clear; tongue but slightly coated; teeth without sordes; sweated profusely through morning. Diet restricted to milk with lime-water, together with brandy. Digitalis and iron continued. Quiniæ sulph. gr. l, acid. hydrobrom. ♏l at 7.30 A. M. A. M., 104.8° F., P. 126, R. 22; P. M., 101° F., P. 108, R. 24.

15*th.* Very restless night; no delirium; tongue, which had nearly cleaned off, again thickly coated characteristically, tip and edges being clear and pink; fever very high; ice cap and frozen cloths applied at regular intervals from 1.30 to 7.30 P. M. 2.45 P. M. complained of pain in bowels, relieved by sinapism. Digitalis and iron continued. Quiniæ sulph. gr. xxx, acid. hydrobromic. ♏xxx at 8.30 P. M. Urine, sp. gr. 1024, acid; chlorides present. A. M., 101.2° F., P. 108, R. 26; P. M., 104.4° F., P. 112, R. 26.

16*th.* Slept well all night; feels drowsy and weak; perspired freely during night, completely saturating bed clothing. Heart's action more regular and stronger; bowels open; urinates regularly. Ice applied three times during afternoon. Digitalis and iron continued. A. M., 100.4° F., P. 102, R. 28; P. M., 104.4° F., P. 130, R. 28.

17*th.* Rested easily, and would feel very comfortable were it not for sweat, which keeps him in perpetual bath; tongue thickly coated and breath offensive; teeth clean; sweat continued all day. Quiniæ sulph. gr. xl., acid. hydrobrom. ♏xl. 7.30 A. M., atropiæ gr. $\frac{1}{60}$ morning and night. Omit digitalis and iron. A. M., 104.2° F., P. 118, R. 26; P. M., 101° F., P. 112, R. 28.

18*th.* Sweating still continues, not very profuse, and chiefly observable in morning; pulse stronger and less frequent; tongue still heavily coated; appetite has disappeared entirely; urine, sp. gr. 1019, acid; chlorides. A. M., 101.6° F., P. 96, R. 28. P. M., 101.8° F., P. 98, R. 26.

19*th.* No marked change; feels very weak and has no desire for food; tongue and throat dry; pupils dilated. Quiniæ sulph. gr. xxx, acid. hydrobrom. ♏xxx at 10 A. M. Omit atropiæ sulph. A. M., 101° F., P. 98, R. 26. P. M., 99.6° F., P. 106, R. 28.

20*th.* Slight improvement; slept well and feels comfortable; eruption on chest and abdomen still present; no pain on pressure over any part of abdomen; tongue slightly clearing; heart's action stronger and more regular. A. M., 100.2° F., P. 98, R. 22. P. M., 101.4° F., P. 110, R. 24.

21*st to December* 16. During this time convalescence may be said to have been established, and the case completed with hardly a symptom worthy of remark. 21st A. M., 99.2° F., P. 95, R. 22. P. M., 99.8° F., P. 106, R. 28. 22d A. M., 97° F., P. 98, R. 22. The tenor of the record is simply improvement. Quinia was given in five-grain doses from time to time sufficient to keep the system under its influence. The bowels, somewhat inclined to constipation, were kept open by occasional doses of Rochelle salt. Slop diet was resumed on November 25th. On 28th brandy was discontinued, vini albi ℥vj, substituted, and this on Dec. 10th was reduced to ℥iv. Dec. 12, full diet ordered. Dec. 16th, patient proceeded to join his company at Fort D. A. Russell, and we have since heard that he entirely recovered.

Case IV.—Aged 23 years; powerful physique; family history good; temperate habits. Following is an extract from early history of case by patient, written at our request: "Came into this country during latter part of February, 1878; stationed at Omaha Barracks. May 24th station changed to Fort Laramie. May 26th joined 5th cavalry, and proceeded to the site of the new post, Fort McKinney, on Clear Fork, Wyo. Remained in camp at this point and immediate vicinity three months. During this time I went on various scouts, to Custer battle-field, Lodge Pole, and Crazy Woman's Creek. Health was excellent; I never felt better in my life. Early in September marched for Camp Brown, third day crossed Big Horn Mountains, camped on Bates Creek; four inches of snow during night; marched all next day through heavy snow storm, wet and chilled through; next night went to Indian camp, which was in damp place, stayed two hours, came away feeling chilly, and noticed my neck was slightly stiff; next day felt quite chilly, neck worse, that evening saw doctor, he called complaint intermittent fever, gave quinia and compound cathartic pills. Reached Brown in ten days; riding in hot sun and fatigue had made me much worse; remained at Brown four days, then set out for Fort Fetterman, reached that post after a ten days' march." Never had typhoid or any other fever—except intermittent eight years ago, which illness lasted six weeks—subsequently had occasionally chilly feeling, but no regular attack of disease. Since May 26th been continuously in the field far from all settlements. Before attack bowels were regular, had no catarrh in head or lungs and no epistaxis. Disease was not ushered in by regular chill, but rather a chilly sensation (occurring only twice); had daily for two weeks more or less high fever, lasting a short time, and followed by sweat; appetite poor; bowels constipated; no tenderness of abdomen, and no rash on body; principal cause of complaint a severe pain in back of neck, but no headache; has indistinct recollection of what happened after leaving Brown.

Transferred for treatment Sept. 28th, 4 P. M., at which time symptoms were severe nasal catarrh, and acute bronchitis, with free secretion; no pain; no abdominal tenderness except over region of liver, which organ is slightly enlarged; no eruption on body; heart action strong and regular; pulse full; fever high; mind wandering; tongue thick, flabby, coated at centre, clear on tip and edges; breath fetid; bowels constipated, urine scanty and high coloured; excoriation over sacrum.

28*th*. Pil. Hydrarg. gr. x, 7 P. M., to be followed by Rochelle salt ℥ss in early morning. P. M., 105.4° F., P. 100, R. 18.

29*th*. No sleep; copious movements of bowels in night and day. 6 P. M., had involuntary passage of feces and urine, fouling bed. 9 P. M., sweating profusely; mind wandering but controllable; no pain. Liq. ammon. acetat. ʒij every two hours. Milk diet. A. M., 103.6° F., P. 100, R. 28. P. M., 104° F., P. 100, R. 22.

30th. Slept nearly all night; mind flighty; tongue dry and glazed; saliva thick and viscid; no sordes; throat sore; pain in right iliac fossa on pressure; bed sore forming on buttocks; bowels open A. M., passage small, flaky, light yellow color; urinary secretions free. To continue treatment and have sponge bath whenever temperature exceeds 103° F. A. M., 101.8° F., P. 94, R. 26. P. M., 103.4° F., P. 100, R. 24.

Oct. 1. Restless and flighty through night, cough frequent; nasal catarrh improving; tongue clearing slightly; conjunctiva injected; appetite good. 10 P. M. in profuse sweat preceded by slight chill. Cold sponge bath 9 A. M. Quiniæ sulph. gr. xv, acid. hydrobrom. ♏xxx, at 11 A. M. and 8 P. M., continue liq. ammon. acetat. A. M., 102.8° F., P. 100, R. 28. P. M., 103° F., P. 102, R. 22.

2d. Wakeful and wandering till 6 A. M., then slept most of day; urinates in bed; is irritable when awake; mind controlled by effort of will. Simple enema 7 P. M., followed by copious light-coloured evacuations; bed-sore spreading; slight perspiration in evening. Omit liq. ammon. acetat. A. M., 98° F., P. 96, R. 24. P. M., 102.4° F., P. 98, R. 28.

3d. Delirium well marked, requires constant watching to prevent escape from bed; only complains of hunger; urinary secretions regular, and, as usual, voided in bed. Quiniæ sulph. gr. xv, acid. hydrobrom. ♏xxx at 11 A.M. and 7 P.M. A. M., 100.4° F., P. 88, R. 24. P. M., 101.8° F., P. 92, R. 28.

4th. Comfortable night; catarrhal symptoms disappearing; tongue less thick and coated; simple enema 11 A. M., followed by two dejections; mind very much more collected; recognizes friends and converses with them rationally. Cold sponge bath 4 P. M. A. M., 100.4° F., P. 84, R. 28. P. M., 102° F., P. 88, R. 24.

5th. Delirious through night, flighty and nervous through day; urinated in bed; bed sores not improving though all care is taken to prevent fouling and pressure; appetite very good. Cold sponge 8 A. M. and 4 P. M. Quiniæ sulph. gr. xv, acid. hydrobrom. ♏xxx 7 P. M., chloral. hydrat. gr. xv at 10.30 P. M., to be repeated at 12 P. M. if necessary. A. M., 101.6° F., P. 76, R. 28. P. M., 102.8° F., P. 90, R. 22.

6th. Slept well till 2 A. M., became restless. Chloral repeated, then slept until 9 A. M.; enjoyed breakfast, and feels well; is still flighty; coughs occasionally with little expectoration; tongue coated, protruded tremblingly and with difficulty; no bad taste in mouth. Cold sponge 9 A. M. and 4 P. M. Simple enema 11 A. M., producing small dejections. Pil. cath. comp. iij 8 P. M., quiniæ sulph. gr. xv, acid. hydrobrom. ♏xxx. 8 P. M. A. M., 100.6° F., P. 84, R. 20. P. M., 100.6° F., P. 88, R. 30.

7th. Quiet sleep till 1 A. M., then becoming restless had chloral. hydrat. gr. x, and rested well till morning; bowels moved twice during night; no pain; mind clear in morning, somewhat flighty during afternoon; tongue still coated, has brassy taste in mouth; nasal catarrh still troublesome. Potassii bromid. gr. xv 7 P. M. A. M., 98.8° F., P. 84, R. 26. P. M., 98.6° F., P. 78, R. 30.

8th. Comfortable night; bed sores still angry; excoriations are appearing on both great trochanters; small boils forming at various points on lower extremities; sat up short time during day. Potass. chlorat. sol.

(gr. xv. to ℥j) for mouth wash. A. M., 98° F., P. 88, R. 28. P. M., 99° F., P. 88, R. 24.

9th. Little sleep till 5 A. M.; fouled bed twice with urine; asleep during morning; simple enema was given to relieve constipation (non-effective); appetite voracious; no eruption on chest or abdomen; lungs clear; liver and spleen very little if any enlargement. Quiniæ sulph. gr. xv, acid. hydrobrom. ♏xxx 4 P. M., pil. cath. comp. ij 9 P. M. A. M., 100.2° F., P. 100, R. 32. P. M., 100.2° F., P. 100, R. 28.

10th. Rested well after chloral hydrate, gr. x, 11 P. M. Sat up most of day; mind perfectly clear; had passage from bowels after simple enema; feces hard, lumpy, and light coloured. A. M., 98° F., P. 92, R. 24. P. M., 100.2 F., P. 100, R. 28.

11th. Slept twelve hours, seems greatly improved; tongue clearing off; general condition promising; mind clear; bed sores healing; boils, of which fresh crops appear almost daily, very troublesome; appetite good; bowels constipated. Quiniæ sulph. gr. xv, acid. hydrobrom. ♏xxx 7 P. M., pil. cath. comp. iij 9 P. M. A. M., 98.4° F., P. 84, R. 28. P. M., 100.2° F., P. 100, R. 24.

12th. Bowels moved during night, otherwise slept undisturbed; another movement at 2 P. M., dejections soft and light coloured; nasal catarrh almost disappeared; strength rapidly returning; sits up most of day and enjoys reading. A. M., 98.4° F., P. 88, R. 20. P. M., 98.8° F., P. 100, R. 22.

13th. No change. Pil. cath. comp. iij 8 P. M. A. M., 98° F., P. 84, R. 20. P. M., 98° F., P. 100, R. 20.

14th. Wakeful and restless through night; fouled bed with urine; sat up most of day and had excellent appetite; mind rational. Quiniæ sulph. gr. xv, acid. hydrobrom. ♏xv 9.30 P. M. A. M., 99° F., P. 96, R. 20. P. M., 100.2° F., P. 96, R. 20.

15th. Fouled the bed. This non-control of bladder arises from no functional difficulty, but is due simply to weakness, and in part to want of mental balance. Says he feels perfectly comfortable, sits up most of the day, reads and talks understandingly; tongue clear; bed sores improving; boils still appearing in fresh crops; perspired during night and had bad dreams. A. M., 98° F., P. 96, R. 20. P. M., 101.6° F., P. 100, R. 20.

16th. No change. Abscess of parotid gland, right side, opened (with lancet), discharging pus freely. Quiniæ sulph. gr. xv, acid. hydrobromic. ♏xv 7 P. M., pil. cath. comp. iij 9 P. M. A. M., 101.2° F., P. 120, R. 16. 9 P. M., 100.6° F., P. 120, R. 16.

18th. Had Rochelle salts ℥j A. M.; quiniæ sulph. gr. xv, acid. hydrobrom. ♏xv at 7 P. M. A. M., 98° F., P. 96, R. 16. P. M., 101.4° F., P. 100, R. 20.

19th. Comfortable night; had two motions from bowels; urinated freely; apparently convalescent; is growing stronger; has, as always, excellent appetite, and feels well in every particular. Boils, still numerous, give occasional discomfort. Has been entirely rational for several days; perspires daily but not excessively. A. M., 98.4° F., P. 100, R. 20. P. M., 101° F., P. 100, R. 16.

20th to *25th.* Case progressed very favourably; bowels moved regularly; appetite continued remarkably good; strength increased daily. On 22*d* dressed without assistance, walked about room, and during day wrote several letters. 21*st.* Quiniæ sulph. gr. x, acid. hydrobrom. ♏x 7 P. M. 22*d.* Quiniæ sulph. gr. v, acid. hydrobromic. ♏xv 7 P. M., repeated 7

P. M. 23*d*. 20*th*. A. M., 99° F., P. 96, R. 16. P. M., 99° F., P. 96, R. 16. 21*st*. A. M., 98.4° F., P. 96, R. 16. P. M , 99.2° F., P. 88, R. 16. 22*d*. A. M., 100.4° F., P. 100, R. 16. P. M., 99.2° F., P. 96, R. 16. 23*d*. A. M., 99.8° F., P. 100, R. 16. P. M., 99.2° F., P. 100, R. 16. 24*th*. A. M., 99.2° F., P. 112, R. 16. P. M., 100.2° F., P. 92, R. 16. 25*th*. A. M., 100° F., P. 100, R. 16. P. M., 101.6° F., P. 98, R. 16.

26*th*. Restless night; pain in left side over region of spleen, which organ is considerably enlarged; tenderness in hepatic region; feels weak and inclined to keep his bed, though more comfortable when sitting up; has pain upon taking full inspiration; cannot lie on right side; no pulmonary lesion. Quiniæ sulph. gr. xv, acid. hydrobrom. ♏xxx 7 P. M. A. M., 101° F., P. 100, R. 16. P. M., 102.6° F., P. 104, R. 20.

27*th*. Slept well; still complains of sharp stitch-like pain in left side; emunctories working freely. 12 M. Quiniæ sulph. gr. x, acid. hydrobrom. ♏x. 2 P. M., had a severe chill, lasting half an hour, followed by fever and sweat. A. M., 101° F., P. 100, R. 16. P. M., 106° F., P. 124, R. 20.

28*th*. A. M., 99.4° F., P. 88, R. 16.

From this time case went on to rapid and satisfactory recovery; for several days the evening temperature ran up above 100° F., then gradually receded to the normal. The pain in left side did not entirely disappear for ten days. Nov. 4th patient took a short walk in open air, and continued to do so each pleasant day until he left this station (15th). So soon as exercise began the bowels became regular, strength returned very rapidly. Quinia was continued in decreasing doses at stated intervals until 3d inst.

Case V.—Aged 32 years; taken sick about September 10, 1878, while crossing Big Horn Mountains with command. Previous history very meagre; patient upon admission and afterwards being in no condition to give information. It will be observed that the case was transferred as quotidian intermittent. We learned from surgeon in charge that patient's principal complaint was severe pain in back of head and neck. In a lucid interval patient told me attack was ushered in by headache and pain in bones; he had no diarrhœa, bowels being generally regular, but micturition difficult.

Admitted to hospital September 29th, P. M. Medium-sized man; large head; light hair; spare habit; body considerably emaciated; strength greatly reduced; mind wandering; tongue almost normal size, slightly coated in centre, clear and pink at tip and edges; teeth clean; conjunctiva clear; pupils reacting equally. On back of neck scar, evidently of recent blister; thorax somewhat dull all over on percussion; respiration superficial; slight roughness upon inspiration; heart action weak, otherwise normal; abdomen, without eruption, generally tender on pressure; liver enlarged and tender; spleen enlarged, but not painful upon palpation; no appetite; thirst great; throat slightly sore; expectoration viscid and whitish; no pain in chest or abdomen, but severe pain in back of head and neck.

29*th*. Solution morphiæ sulph. (gr. xvj to ℥j) ♏v, hypodermically, to relieve pain, *p. r. n.* Milk diet; sponge bath. A. M., 104.8° F., P. 82, R. 30.

30*th*. Restless and delirious through night; complains of headache. Continue morphia *p. r. n.*, and have quiniæ sulph. gr. iij every three hours. A. M., 102.8° F., P. 78, R. 28. P. M., 102.2° F., P. 78, R. 28.

Oct. 1*st.* No change; mind wandering, but controllable; pain in head still very severe. Continue treatment. A. M., 101.8° F., P. 78, R. 26. P. M., 102.8° F., P. 80, R. 24.

2*d.* Tongue clearing; headache somewhat relieved; restless during night; not as weak as symptoms would lead to expect; heart action good; micturates regularly and without much difficulty; urine, sp. gr. 1024, acid, albumen a trace, chlorides a trace. Continued treatment, and add atropiæ sulph. gr. $\frac{1}{60}$ to morphia for hypodermic injection. A. M., 102.4° F., P. 70, R. 20. P. M., 104.6° F., P. 14, R. 24.

3*d.* Seems to feel a little better this A. M., probably due to naps caught during night; head still aching, and abdomen very tender; bowels constipated. Quiniæ sulph. gr. xv, acid. hydrobrom. ♏xxx morning and night; magn. sulph. ℥ss, A. M. Milk and gruel diet. A. M. 103.2° F., P. 74, R. 22. P. M., 102.8° F., P. 80, R. 20.

4*th.* No change except less pain in head; bowels open during night; sleepless and wandering; some appetite, and considerable strength. Omit treatment. A. M., 100.2° F., P. 78, R. 20. P. M., 102.6° F., P. 72, R. 26.

5*th.* Still flighty and restless; complains of no pain, but mind in such condition of hebetude that little can be learned regarding sensations; urinates freely; bowels open; expectoration thick and slightly rusty; subcrepitant râles in right lung; abdomen still tender; profuse sweat 6.30 to 8 P. M. Quiniæ sulph. gr. xv, acid. hydrobrom. ♏xxx at 11 A. M. and 8 P. M. Urine, sp. gr. 1022, acid, albuminous, chlorides present. A. M., 101.6° F., P. 72, R. 20. P. M., 102.8° F., P. 72, R. 20.

6*th.* Comfortable night; tongue clearing; teeth without sordes; still complains of pain on pressure over liver; expectoration viscid with slight rustiness. A. M., 100.6° F., P. 72, R. 20. P. M., 102.8° F., P. 84, R. 20.

7*th.* Feels well; mind collected; still has pain in right side; expectoration viscid, but not rusty; no albumen in urine; heart's action regular and strong; strength fair. Quiniæ sulph. gr. xv, acid. hydrobrom. ♏ xxx, 10 A. M. and 9 P. M. A. M., 101.4° F., P. 78, R. 19. P. M. 103.8° F., P. 86, R. 24.

8*th.* Generally improved; slept well and feels quite bright; entirely rational. Omit medicine. A. M., 99.6° F., P. 76, R. 18. P. M., 102.6° F., P. 78, R. 22.

9*th.* Symptoms at morning visit favorable; slept most of night; is without pain, and has quite an appetite, though still confined to soups and gruels; mind perfectly clear. 9.15 P. M., complained of severe pain in bowels, of colicky character; ordered sinapism, enema. terebinth., Magendie's solution morph. ♏v (hypodermically), and repeat in one hour if necessary; quiniæ sulph. gr. xv, acid. hydrobrom. ♏xv, at 10 A. M. and 9 P. M. Urine, sp. gr. 1024, acid, no albumen. A. M., 99.8° F., P. 74, R. 20. P. M., 102.4° F., P. 82, R. 18.

10*th.* Slept very little; had colicky pain more or less through day; abdomen hard and tender to touch; somewhat relieved by sinapisms and hypodermics of morphia. At 9.30 P. M. pain became excessive; morphia and mustard continued, the latter substituted by turpentine stupes. 10.30 P. M., brandy ℥j; cold cloth to head. A. M., 101.2° F., P. 84, R. 22. P. M., 104.4° F., P. 116, R. 28.

11*th.* Great prostration; heart's action weak; breathing costal; abdomen tender in all directions, hard and tympanitic; perspiration cold and profuse; delirious; both pupils contracted (from opium); turpentine stupes and morphia continued, with brandy. A. M., 105.2° F., P. 138, R. 14. Died at 11.35 P. M.

Necropsy.[1]—Omentum contains considerable fat, is very much injected, and has numerous adhesions to intestines; liver increased by about one-half its size, of dark-brown colour, smooth surface, no abdominal adhesions, somewhat softened and filled with blood; gall-bladder very much distended, contains no calculi; spleen about twice normal size, capsule tense, and so friable that it ruptured on removal under most delicate manipulation; parenchyma pulpy, of blackish-red colour, and almost liquid consistency, being gorged with black blood; peritoneal cavity contains a thin yellow fluid of fecal odour; peritoneum above umbilicus is reddened and somewhat rough with slightly velvety appearance, below umbilicus there is a thin transparent layer of coagulated fibrine with occasional opaque patches; intestines covered with a rough-whitish layer, and matted together, contents fluid, no hardened masses; eighteen inches from caput coli was found a perforation of ileum, through which the same yellowish fluid, seen in peritoneal cavity, was pouring out; internally the whole intestinal canal was covered with mucus and epithelial masses, which exudation was most marked in ileum and colon; about the ileo-cæcal valve (within twenty-four inches) in small intestine, were several well-defined elevations of circular form, the periphery being raised ridge-like, a line above the general surface, the size of these plaques was about that of a half-dime piece. At a point corresponding to the rupture already mentioned, was found what was evidently an ulcerated Peyer's patch, with its centre as though punched out by a cutting instrument. There was also enlargement of the solitary glands; kidneys large, smooth, and white, right weighing 8½ ounces, left 9 ounces (not examined internally); both lungs were universally adherent to pleura (adhesions very firm); heart small, flabby, and of yellowish colour; pericardium contains but little fluid; blood very dark coloured; thoracic viscera not examined internally; dura mater strongly adherent to cranium, pia mater injected, arachnoid covered with patches of pearly exudation; brain substance soft.

In reviewing the foregoing clinical histories it is reasonable to assume that the external causes of disease were identical, since the outward conditions of the patients were entirely similar. True this is only an assumption, incapable of absolute proof, but certainly plausible, and the truth of which is demonstrable up to a point rarely reached in such investigations.

It will be observed that the command had been absent from permanent settlements four months, sufficiently long to preclude the probability of the *materies morbi* having remained latent from the time the column first took field until the disease appeared. Between June and September the troops did not approach any settlement save that of Camp Brown, where they remained but a few days, and intercourse with which during their sojourn was necessarily restricted by discipline of the camp.

Assistant Surgeon C. H. Winne, U. S. Army, Post Surgeon, Fort

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[1] The cranial, thoracic, and abdominal viscera were sent to the Army Medical Museum in as perfect condition as possible, for examination there, which will prevent a very detailed description here.

Washakie, Wyo. (formerly Camp Brown), writes, in reply to request for information as to prevalence of typhoid or typho-malarial fever in 1877 and 1878: "Intermittents and remittents are noted (on hospital record), but neither typhoid nor typho-malarial are noted." Dr. R. B. Grimes, U. S. Army, who was Post Surgeon at Brown, in 1878, and some years previous, states: "I was stationed in the Wind River country over four years, and I am positive that I never met with a case of typhoid fever in that region. . . . I have no reason whatever to believe that there were causes or influences at Camp Brown to generate typhoid."

The first permanent camp of the cavalry was established in a region heretofore almost undefiled by human foot, leaving entirely out of consideration human settlement, and communication with which was, by reason of its very isolation, restricted. The second camp, but a few miles distant, was equally isolated. The road to Camp Brown through the Big Horn Mountains, an almost disused Indian trail (during the march over which in most of the cases the disease manifested itself), was virgin of settlement or civilization. From all of which conditions it would be difficult to imagine any immediate or remote human origin for the disease germs.

A due consideration of the circumstances surrounding the command, leads us to seek for the predisposing causes of disease in or about its camps on Clear and Rock creeks. These rapid streams take source in the Big Horn Mountains, and draw their supply from the snows which perpetually cap the summit of this elevated range. The summer of 1878 was exceptionably hot, so warm indeed that the snow disappeared entirely from many of the peaks, which, according to tradition obtaining among the few trappers who have hunted that region, were never before uncovered. It is to be regretted that a systematic analysis of these waters was not made, but judging from the rough test of taste, their snow origin was unmistakable, and there was "a suspicion of vegetable infusion." More accurate tests would, doubtless, have confirmed this suspicion of organic matter, since at this time the water supply was from snow probably many seasons old, which each year became more and more impregnated with organic germs filtered through superimposed strata. "That these cases," Dr. Gray writes, "were malarial, there is in my opinion no room for doubt, but whence came the toxic germs? Reasoning by exclusion I am compelled to attribute their source to the water formed by the melting snow."

Such conditions would certainly be deemed sufficient to account for any malarial manifestations—and such we may assume were predisposing causes to disease in the foregoing cases; the exciting causes being the hardship and exposure consequent upon the march through the mountains. If there were other causes, immediate or remote, they do not appear.

Conceding the causes of diseases as identical, it logically follows the diseases are similar, and this supposition is borne out by coincidence in mode of onset, symptoms, and course in all cases whose clinical histories have been herein set forth. Case V. presented no special features not attributable to individual idiosyncrasies. On admission, patient seemed more under influence of *materies morbi;* but, so soon as system became amenable to remedies, temperature fell, pain disappeared, appetite improved, and there was fair promise of recovery. But this man undoubtedly had typhoid fever, and died from its effects. Surgeon J. J. Woodward, U. S. A., writes: "In your case the lesions found in the specimens sent to the Museum are those of ordinary typhoid fever;" hence, by the terms of our hypothesis, all these cases must be typhoid.

This conclusion may not be accepted without protest; running water from virgin snow is not generally believed to be deleterious, and certainly not to contain the germ from whence alone typhoid is held to grow. Possibly, Case V. suffered from another disease than the rest; but, if so, there was nothing to indicate the difference.

"Mountain"[1] fever is far from being a typical enteric, even though the latter, save as to its pathology, is a never constant entity. "The diseases which are produced by the specific poison of typhoid fever," writes Liebermeister,[2] "differ a good deal among themselves; some of the diseases are so serious that life is almost inevitably destroyed by them; others are so trifling that patient and physician are left in doubt whether there were really any disease at all; and between these extremes we find every gradation."

In enteric, the fever has a curve marked briefly by a gradual rise, continuance, remission, and finally intermission. The histories of the foregoing cases would indicate that they came under observation here during second and third periods, *i. e.*, continuance and remission.[3] The thermometric records in a general way attest this; there are, however, some sudden and marked deviations which seem to indicate the probability of other than typhoid influences being at work.

It will be observed that, in every case under consideration, there were at intervals, occurring with greater or less regularity, chill, fever, and sweat—frequently all three—inevitably two of these pathognomonic stages of intermittent fever. The recurrence of these symptoms was so frequently observed that they could hardly be regarded as the "after fever" of the

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[1] Writers previously quoted, while not conceding the identity of "mountain" and typhoid fevers in their description of the former disease, certainly give a recognizable picture of the latter. This question of identity finds its counterpart in the discussions of the nature of fevers once supposed to be indigenous to the Appalachian Range, and now generally recognized as enteric.

[2] Ziemssen's Cyclopædia, vol. i. p. 76.

[3] Drs. Smart and Gray give the period of incubation of "mountain" fever as about two weeks. Dr. Williamson (Smart, *American Journal of the Medical Sciences*, 1878) says: "When morbid process is fairly established, you will have a case of disease that will run from three to five weeks before you can see the commencement of convalescence."

Germans, and certainly not as relapses, of which more than two are rarely encountered; moreover, we have to take into consideration the mode of onset of the disease, which at least so closely resembled that of intermittent that the patients were transferred as suffering from this disease in its typical forms.

Although the fever was high and long continued in several cases, in but one (V.) was there an approximation to the *status typhosus*—while in the only other case (IV.), in which head symptoms were at all prominent, the fever was by no means excessive—though both had involuntary dejections. Diarrhœa did not appear; on the contrary, the patients were all more or less constipated; there was no tympanites or meteorismus. In but one (III.) was there anything that approached in appearance the typical roseola. No epistaxis early in any case, and no intestinal hemorrhage. Convalescence was rapid, and the hair did not fall. In two (II. and IV.) there was acute nasal catarrh. Herpes labialis appeared in three (II., III., and IV.).

Imbued with the idea that typhoid fever could not originate *de novo*, or remain latent in the system for a longer period than four weeks, we have been slow to conclude that "mountain" fever was in any wise related to enteric; in fact, we have heretofore advanced the theory that the fever of this region was a subcontinued fever of purely malarial origin; that the temperature curve showed daily exacerbations and remissions of such character as to lead to the belief that we had a mixture of types, but not of diseases. In the light of further experience and pathological anatomy, we are obliged to abandon the position then taken, and acknowledge "mountain" fever as essentially typhoid.

We, however, contend that the morbific causes are not solely those of enteric, but that they are modified by the *materies morbi* of intermittent fever—a fact which we believe to be substantiated: 1st. By deviation from the normal temperature curve of typhoid; 2d. By the difference in many symptoms, which, taken singly, would be of little importance, but, in the aggregate, are entitled to grave consideration; 3d. By the action of quinia, which seems to have a specific effect other than the simple antipyretic influence exerted in typhoid.

From which the following is deduced:—

1st. The fever of the Rocky Mountain region is a hybrid disease, the prominent features of which are typhoid—the modifying, intermittent; is, in fact, the typho-malarial fever of Woodward.[1]

2d. It appears during or after exposure incident to field-service, generally, though not necessarily, in late summer and early autumn, and seems to bear no relation to typhoid infection as now usually accepted by the profession.

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[1] The question of hybridity of disease has no place in this essay; that such mongrels are recognized, at least in our country, "goes without saying;" that they should be recognized in Europe seems conclusively proved by Dr. Woodward (Trans. International Medical Congress, Phila. 1876. Paper on Typho-malarial Fever).

3d. At its inception, this disease manifests itself as an intermittent of quotidian, tertian, or other form; this stage is followed (in about two weeks) by the typhoid stage, lasting in neighborhood of four weeks, in which typical typhoid symptoms may be observed, modified to a greater or less degree by intermittent indications.

4th. The pathological anatomy of the disease is that of typhoid fever.

5th. The treatment should be antiperiodic and antipyretic.

FORT FETTERMAN, WYOMING TERRITORY, 1879.

Memorandum. By J. J. WOODWARD, M.D., Surgeon U. S. Army.—Without at present committing myself either for or against the views expressed by Assistant-Surgeon Hoff in the foregoing interesting paper, I wish to state that, besides the specimens from the fatal case he describes (Nos. 1418, 1419 and 1420, Medical Section), the Museum possesses another specimen from a case of the so-called mountain fever, contributed by Assistant-Surgeon A. C. Girard, U. S. A. The patient was a quartermaster's teamster, who died at Fort Keogh, Montana Territory, March 18, 1879. On the autopsy, characteristic typhoid ulcers were found in the small intestine, one of which had perforated and was the immediate cause of death. (The specimen is No. 1482, Medical Section.) Now, it is easy enough for those who have made no autopsies in this disease to be led by speculative considerations to insist, as my friend, Assistant-Surgeon Charles Smart, U. S. Army, has done (this Journal, January, 1878, p. 34), that mountain fever is merely "a malarial remittent with adynamic tendencies;" but such positive observations as those of Drs. Hoff and Girard will serve to show how unsafe it would be to repose confidence in immature generalizations of this kind.

A like criticism applies to the views Assistant-Surgeon Smart has advanced in the same paper (p. 38 *et seq.*) with regard to the camp fevers of the late civil war. Clinical observation in the Army of the Potomac, which even "an occasional autopsy" did not serve to enlighten, have led him to adhere strongly to the opinion that our camp fevers were merely remittents which assumed an adynamic type towards their close, and that they were not often complicated with the typhoid process, which, indeed, he imagines to have been comparatively rare. In a subsequent publication,[1] after insisting that "the camp fevers of this country are malarial, the germ being either air-borne (*malarial*) or water-carried (*aqua-malarial*)," the same gentleman writes of typhoid fever: "In more populated districts, the specific germ of typhoid may add its train of symptoms to the list of camp fevers. It is a disease which has, without doubt, invaded our camps in many instances; but that it figured during the late war—simple or masked by malarial concomitants—as largely as we are called upon to believe by Dr. Woodward, has been shown by the writer to be exceedingly doubtful." In support of the opinion contained in the last clause of this passage, the author refers to his article in this Journal just cited.

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[1] *Hygiene of Camps*, in a work on *Hygiene and Public Health*, issued, in lieu of a translation from the German volume on the same subject, as Vol. XIX. of the American edit. of Ziemssen's Cyclopædia, New York, 1879, p. 148–9.

Now, certainly the testimony of Assistant-Surgeon Smart, recorded in that article, is quite valuable as an addition to a great deal of other evidence of the same kind which tends to show the similitude that existed between the early stages of the majority of the camp fevers of the late war and ordinary malarial fevers; but he himself informs us (this Journal, Jan. 1878, p. 40) that he "saw many such cases in their inception, few comparatively at their termination." Had he been able to follow his fever patients to the hospitals of Alexandria and Washington, he would have learned that, in the great majority of the autopsies made in fatal cases, *unmistakable typhoid lesions* were recognized in the small intestine; and, had he extended his inquiries to the other general hospitals, he would have found that this was equally true of them all. In point of fact, the records of the post-mortem examinations of fever cases made during the civil war fully support the views I have heretofore expressed of the extreme frequency of the typhoid complication; and their publication (in the third medical volume of the *Medical and Surgical History of the War*) will convince the reader that the views expressed by my friend in the two papers to which I have just referred are inaccurate historically, and that their general acceptance would be pregnant with mischief in future wars.

ARTICLE III.

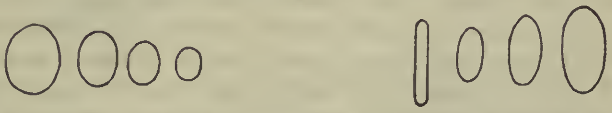
ON A NEW METHOD OF TREATING CHRONIC NASAL CATARRH. By HARRISON ALLEN, M.D., Professor of Physiology in the University of Pennsylvania.

IN the course of my clinical studies in chronic nasal catarrh, I have become interested in a method of local treatment which presents, in my opinion, decided advantages over those ordinarily employed. Method is, perhaps, too complimentary a term to use in speaking of the resources of the physician usually relied upon in treating this obstinate affection. Let me rather say that, in a treatment which has hitherto possessed but little or no method, I have endeavoured to institute one, that I have used with success—a few simple means of reaching and medicating the labyrinthine surfaces of the nasal chambers and the obscure region of the pharyngeal vault.

It is impossible to enter fully into the subject of the treatment of nasal catarrh without some consideration of the etiology of the affection. I will, therefore, briefly state my views of the causation of at least an important group of cases.

The nasal chamber being a modified portion of the respiratory tract, it follows that its functional integrity is dependent upon the freedom with which a current of air can pass through it.[1] Obstruction is fatal to its efficiency; for not only is the sense of smelling lost, but the unconscious effort to breathe through the nose ordinarily causes congestion and distress, and at all times the normal outflow and distribution of mucus is interfered with. Nasal mucus has a tendency to flow backward. The gentle inclination of the floor of the nose from before backward, and the dip of the turbinated bones, determine this. Nasal obstruction interrupts this flow, and occasions accumulation and subsequent inspissation of mucus, or a reversal of the current, which results in escape of the secretion at the nostrils. If it is conceded that these statements are correct, all that becomes necessary to make their application to chronic nasal catarrh is to demonstrate the existence of obstruction in that affection. This is not difficult to do. The patient should be seated in front of the physician as though the laryngoscope was about to be employed; namely, by the side of a powerful lamp, the light of which is reflected, from a mirror on the brow of the physician, directly into the nostril. In order to illuminate properly the nasal chamber, a speculum is necessary. One may use Folsom's speculum as modified by myself,[2] or the ordinary vulcanite ear speculum modified by converting the round or oval opening into an elliptical one, as shown in figure 1. Such an instrument permits a deeper entrance to be effected than with a wider form—keeps the hairs of the nostril well out of the way, and protects the alæ from accidental contact of irritating drugs. In the normal nasal chamber the turbinated bones do not touch the nasal septum, neither do the middle or inferior turbinated bones impinge on each other, or the floor of the nose. Should, however, chronic nasal catarrh be present, the middle turbinated bone is often seen lying close against the septum, or the

Fig. 1.



Calibres of the aural specula. Calibres of the nasal specula.

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[1] For limitation of this statement, with discussion as to the olfactory and respiratory values of the nasal chambers, see Dr. Wm. Ogle, Med.-Chir. Trans. vol. liii. 1870, p. 263.

[2] This simply comprises in soldering the vertical wire to the upper border of the lower flange. It thus permits a wider space for introduction of instruments. The instrument thus modified is for sale by Mr. Gemrig of this city.

inferior turbinated bone is found occluding the inferior meatus.[1] It must never be forgotten that the range of variation in the details of the normal nasal chamber is very great, and care must be exercised not to confound the foreshortening of a deflected yet healthy nasal septum, lying with its most prominent part in front of the inferior or middle turbinated bone, with the contact I have associated with the symptoms of one form at least of chronic nasal catarrh. Neither should the mere contact of the anterior portion of the middle turbinated bone against the septum be looked upon as of necessity an exciting cause of nasal catarrh. Not infrequently perfectly healthy persons will exhibit such contact over a small surface. But in such instances the contact is always found to be slight—the apposed surfaces barely touching—and a probe can be passed without pain or sense of obstruction. In the contact which has clinical significance I should expect firm pressure of the scroll and septum against one another, and some pain to follow manipulation.

When the point of contact is recognized, the indication for treatment is to destroy it. This is accomplished by means of local remedies applied to the mucous membrane at and about the places of contact, or, in examples of abnormal deflection of the nasal septum, by removal of the offending portions of bone. In the case of the inferior turbinated bone, the swollen and engorged tissues occupying the inferior meatus may be removed by the knife.

In carrying into effect the above rules of treatment, I have adapted several instruments to the special needs required. These I will now describe. To make topical applications to the interior of the nasal chamber, I employ a simple cotton carrier closely resembling the instrument in common use by the aurist. It consists of a single tapering rod of soft iron, slightly roughened at the smaller end for convenience of holding a pledget of absorbent cotton, and fixed in a small wooden handle at the other. A wooden handle is preferable to a metallic one, since the latter is liable to fall out of the nasal chamber from its own weight if the hand supporting it be removed for but a moment. It may be bent at an angle; the shape seen in figure 2 is the one ordinarily sufficing. The absorbent cotton can be steeped in any desired substance, and carried to the spot selected through the nasal speculum. The pledget of cotton should be moistened in water and warmed for an instant over the flame of the lamp.

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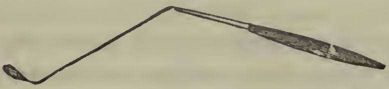
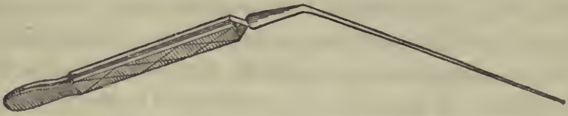
[1] It is well to remember that obstruction may occur either from a sentient surface being squeezed, or by the same surface on the opposite side, *i. e.*, in the other nasal chamber, extending its parts beyond the limit assigned by nature. Thus a deviation of the perpendicular plate of the ethmoid bone to the left may compress the left middle turbinated bone, or, if the turbinate of this side be small, it may escape compression, while the right turbinated bone may extend its natural limits, and, by following the receding septum, may actually press against it. It by no means follows, therefore, that obstruction is always met with upon the narrowed side, although this is very often the case. It is an observation every one has often repeated that the inferior turbinated bones grow downward, in cases of cleft palate, and in a measure occupy the space in the roof of the mouth. In the same way asymmetry of the lateral masses of the ethmoid bone is often associated with deviation of the perpendicular plate. When this deviation occurs slowly, or is congenital, the parts are adapted and the result is harmonious; when, however, it is acquired, it is liable to excite disturbance.

Fig. 2.



Thus prepared it does not irritate the mucous surfaces more than any other intruding solid substance. After employment of various agents, I have found the best results from a combination of tannic acid with carbolic acid or iodoform, held in suspense in gelatine.[1] The object of employing gelatine rather than water or spirit is to enable the medicine to remain for a long time in contact with the affected parts, and, in dissolving, to form a thick fluid which measurably imitates the consistency of the normal secretions of the parts. Thus syringing the nose with a simple fluid can have but a transient effect, while the medicine reaches perfectly healthy surfaces as well as the diseased ones. The method here recommended restricts the application to the spot where it is needed, and allows the medicine to slowly dissolve. I have often succeeded, in cases

Fig. 3.



of pronounced contact between the septum and the anterior portion of the middle turbinated bone, in introducing a plate of gelatine, medicated with tannin and carbolic acid or other drug, into the space behind the point of contact. Here it would remain, if aptly lodged, for a period varying from an hour to half a day.

In some instances where much resistance is to be overcome, I have found it advantageous to introduce the gelatine plates with a pair of forceps, of the design shown in figure 3. In using this instrument, the blades should be so held as to spread from above downward. This enables the operator to manipulate the instrument freely, since the space between the septum and turbinates, while at all points narrow, is sufficiently high to enable the largest desired plate to be introduced and lodged with relative ease.

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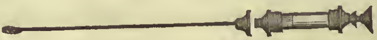
[1] I append the formulæ of the preparations I ordinarily employ, which are made for me by Borell, of this city.

Stiff iodoform preparation, with geranium and carbolic acid: ℞. Pure carbolic acid, grs. v; fluid ext. geranium maculatum, gtt. xv; distilled glycerin, gtt. x; powdered iodoform, ʒiijss; French gelatine, ʒj; water, a sufficient quantity. Dissolve the gelatine in a little water, then add the other ingredients, and rub to a smooth paste.

Stiff iodoform preparation without geranium: ℞. Pure carbolic acid, grs. v; distilled glycerin, gtt. x; powdered iodoform, ʒiijss; French gelatine, ʒj; water, a sufficient quantity. Dissolve the gelatine in a little water, then add the other ingredients, and rub to a smooth paste.

When it is desired to employ a powerful astringent, such as sulphate of copper or nitrate of silver—in a word, any fluid agent, the effect of which it is required to limit to a small space—the instrument shown in figure 4 may be employed. The instrument is a glass syringe fashioned after the plan of the hypodermic syringe, but much smaller. Attached to it is an adjustable nozzle bearing a long delicate pipe of gold or platinum. The medicine is drawn up in the syringe; the nozzle is fixed securely, and a pledget of absorbent cotton is wrapped round the free extremity of the latter. The pledget of cotton should be somewhat larger than that represented in the woodcut. Thus prepared the instrument is carried to the affected spot through the speculum, and the piston of the syringe pushed a sufficient distance to saturate the cotton. From one to two drops of the liquid is all that is necessary to accomplish this. The syringe is then allowed to remain in position long enough to insure a thorough application. By the time this has been accomplished, more or less mucus has collected about the spot; so that, when the instrument is withdrawn, the cotton, being enveloped in mucus, is so protected that no action upon the general mucous membrane of the nose is appreciable. The strongest applications can be employed in this way with perfect safety. I often employ nitrate of silver in saturated solution. Inspection subsequent to the application (in the event of silver being used) reveals, by the white patch of albuminate of silver at the spot touched, the accuracy of the method.

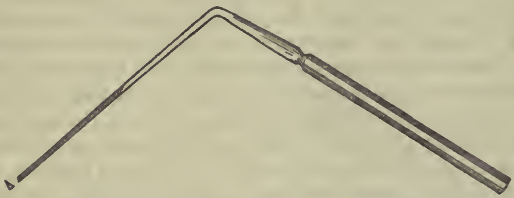
Fig. 4.



The above plans of treatment are as efficient in reaching the roof and sides of the naso-pharynx as the nose. The shafts of the instruments are of sufficient length to reach the most remote points. I have found that a perfectly straight cotton carrier or syringe pushed steadily through the inferior meatus, or the interval between the inferior turbinated bone and the septum, will reach the centre of the pharyngeal vault. If after this vantage the instrument be slowly drawn forward at the same time that it is kept in contact with the roof, it is felt after a little, in favourable tests, to slip upward. This upward motion is due to the probe passing from the pharynx into the nasal chamber directly in front of the sphenoidal sinus. In those forms of catarrh which are accompanied with marked occlusion of the nasal chamber between the septum and the anterior portion of the middle turbinated bone, the secretion is liable to accumulate in the upper portion of the nose. At the same time, owing to the morbid condition of the membranes which supervene upon such long-standing interference with the normal condition of the parts, the secretion becomes more or less inspissated. Such a locality cannot be reached by the unaided efforts of the patient, nor by the nasal douche, without the employment of a degree of force which would be dangerous to the integrity of the middle ear. The cotton carrier, employed as above indicated, will remove with ease such accumulations. I have repeatedly succeeded in bringing away large masses of tenacious semi-inspissated offensive mucus from an apparently perfectly clean nasal chamber immediately, after the most careful syringing and the fruitless use of the douche. It must be remembered that this region cannot be inspected either from in front through the speculum, or from behind by reflected light. After removal of the retained mucus, the surfaces can be medicated by the long-nozzled syringe—the same manipulation being employed, namely, to push the instrument through the nose into the pharynx, and then slowly withdrawing it, at the same time exerting a slight upward motion, until the end of the instrument slips to a higher plane, when it is known to be resting in front of the sphenoidal sinus.

I have already mentioned the fact that, among the causes of nasal irritation leading to chronic catarrh, abnormal deflection of the nasal septum is conspicuous. In some instances this is so pronounced as to prevent relief following any medication of the surfaces. This condition I have successfully met by cutting away the offending osseous projections. A knife (Fig. 5) has been devised which, being composed of a single piece of metal, as in a dental instrument (such as a plugger or chisel), is bent at a moderate angle and presents a double file-cutting edge anteriorly. The instrument can be introduced into the nose, and by a to-and-fro motion readily cuts or files down the yielding spicule-like projection.[1]

Fig. 5.



The detached figure at the end of the instrument represents a transverse section of the file-knife.

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[1] The instruments described were made by S. S. White, the well-known manufacturer of dental instruments, Philadelphia.

In illustration of the employment of the instruments and manipulations already given, I will now give abstracts of cases from my note-book.

Case I.—T. M., aged 28, came under treatment Dec. 27, 1878; has suffered from chronic nasal catarrh for ten years. During this time had been under treatment, but with no result further than temporary improvement. Complains of sense of heat and fulness in the nose. Discharge abundant. Upon inspection with speculum, the inferior turbinated bone was seen in contact with the septum. The inferior turbinate touched the septum at the angle in the latter answering to the anterior end of the perpendicular plate of the ethmoid. By careful employment of the double angulated cotton carrier, contact between the middle turbinated bone and the septum is detected, although these parts were invisible, owing to the relation of the parts near the floor of the nose. The right side of the nose is larger than the left, and nowhere exhibits any contact of the turbinates with the septum. The patient cannot locate the trouble in either side of the nose, although it was evident that the mischief had its seat in the left side only. He cannot sleep on the right side, owing to the functional loss for respiratory purposes of this half of the nose, while the face is half-buried in the pillow.

Chronic follicular pharyngitis with engorgement of the adenoid tissue at the roof of the pharynx, coexisted with the above condition.

After the removal of the nasal discharge by the cotton-carrier, the post-nasal pharyngeal syringe, holding a weak solution of carbolic acid and fluid extract of geranium, was employed as a general cooling and slightly astringent wash to the irritated surfaces. After which, applications of nitrate of silver in saturated solution were made to the inferior turbinated bone, and plates of gelatine charged with iodoform were lodged in the nasal chamber *behind* the point of contact of the middle turbinated bone and the septum.

This treatment was continued twice a week; once a week an application of London paste was made to the roof of the pharynx.[1] The patient at once acknowledged improvement. The contact between the inferior turbinated bone and the septum was broken up, and inspection was permitted of the deeper parts of the nose. Improvement began at the time of the separation of these two surfaces. The contact between the middle turbinated bones and the septum was more obstinate, but in time also succumbed. Patient discharged February 17th, cured.

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[1] The employment in my hands of London paste in the treatment of adenoid disease of the roof of the pharynx has been followed uniformly by good results. When the pharynx is tractable the paste can be readily applied to any part of the naso-pharynx. The instrument is a simple rod of soft thick wire, which will enable the operator to press the free end into any curve desired. Finding by a little practice the curve that is best suited to the individual case, a small quantity of the paste is collected upon the cotton on the end of the wire, and, the patient holding the tongue down, the operator, placing the rhinal mirror in the oro-pharynx with one hand, with the unengaged hand inserts the wire in the oro-pharnyx, and being thus aided by reflected light he carries the paste (with entire freedom from the danger of touching healthy or sentient surfaces) to the place or places desired. The pain of such application to diseased glandular structures is not as severe as would be *à priori* supposed. In the majority of instances the patient makes no complaint, in others a slight sense of soreness and sense of heat alone ensues. When the pharanyx is so irritable as not to permit of this manipulation, I succeed in introducing the London paste through the nose to the roof of the pharynx, either through a Zaufal speculum, by means of a straight, small cotton carrier, or without protection of any kind if the nasal chamber be moderately capacious.

Case II.—S. W., aged 24. Has complained of nasal catarrh for a year. Came under treatment Dec. 4, 1878. On the right, which is the smaller, side contact at middle turbinated bone was detected. Nothing abnormal could be detected in the nasal chambers other than this point of contact. Existing with the catarrh, was a slight chronic pharyngeal and laryngeal inflammation requiring treatment. Local applications to the region of contact so far improved the parts that, by Dec. 30th, no contact existed, and the improvement was decided. Patient ceased reporting Feb. 27, 1879, relieved of his nasal difficulty.

Case III.—J. C. B., aged 40 years, who had suffered from nasal catarrh for many years, came under treatment Nov. 26, 1878. The discharge is not excessive, but is liable to follow abrupt changes of temperature, particularly those determined by passing from a warm to a cold room. She has been compelled to retire from the table owing to a sudden flow of secretion dependent upon the difference in the temperature of the dining-room and the room left a short time before. She has been much annoyed in the same manner upon entering a church or other uniformly warmed building in cold weather. The general health is good; no pharyngitis or laryngitis. Patient complains of a local dull ache at the root of the nose.

Upon examination, there was found on the right side of the nose close contact between the middle turbinated bone and the septum. The former was swollen and of a dull purplish colour. The left side of the nose was normal. The treatment consisted in making applications of saturated solutions of sulphate of copper to the surfaces of contact, and wedging in plates of gelatine and iodoform *above* and *behind* the point of contact. Improvement was almost immediately announced, and the patient was discharged cured March 6, 1879. She has since returned at long intervals with some slight return of the symptoms, but a single application was alone needed to relieve them.

Case IV.—C. S., aged 13, suffered from chronic nasal catarrh for three years. The discharge, which was chiefly pharyngeal, was copious. The patient referred his symptoms to the pharynx, complaining that his throat was sore, at the same time acknowledging a persistent slight pain at the root of the nose. The patient also suffers from functional heart disease. On the date of the first examination, Dec. 26, 1878, discovered contact between both the middle turbinated bones and the septum. Both inferior turbinated bones swollen and red. Applied saturated solution of nitrate of silver, by the syringe, to the region above points of contact and the under free surfaces of both middle turbinated bones. After two such applications, after an interval of three days, the pharynx and nose received a general application of the fluid extract of geranium and carbolic acid. Subsequently, a paste composed of iodoform and gelatine was applied to the upper surface of the nasal chambers, near the point of former contact. Patient ceased reporting Jan. 31st, very much improved. Returned March 24th, with the report that he had remained perfectly well for one month, at the end of which time symptoms slowly returned. The main features of former treatment were repeated, ending in improvement, which was probably permanent. The patient ceased reporting, and has been heard of indirectly through his parents as being well of his nasal difficulty.

Case V.—A. M. H., 70 years of age, has had nasal catarrh for fifteen months. It appears to have followed, or, at least, to have been coincident with, a fall from a horse. Complains of congestion of the head, dizziness, and neuralgic pain in the left side of the head and face; the pain being accurately limited to the terminal branches of the fifth nerve. The discharge is entirely from the left side of the nose.

Upon examining the nose, found the middle turbinated bone of left side pressing firmly against the septum. Extending upward and outward from the septum on a lower plane to the former, was a bony outgrowth almost entirely occupying the middle meatus. The inferior turbinated bone was normal. Inspissated discharge was found lodged between this exostosis and the middle turbinated bone. The pharynx irritable, with moderately enlarged swelling to the median side of the palato-pharyngeal folds. The roof of the pharynx occupied with tenacious discharge. The treatment was instituted Feb. 1, 1879, and consisted essentially of the application of agents already mentioned. The next visit upon the 3d of February, she reported improvement. An ointment of aconitia, one grain to the drachm, was ordered to be used upon the skin over the painful spots, in addition to the local remedies applied to the interior of the nose. Improvement continued steadily both in the discharge and the neuralgia until Feb. 25th, the pain now being restricted to only the left half of the lower lip. The discharge almost disappeared, the pharynx being entirely free, and a small quantity alone, of a whitish, semi-fluid character, lying upon the exostosis. The patient then passed from treatment for two weeks, at the end of which time she reported with the statement that the pain had gradually abated, notwithstanding there had been no treatment for a fortnight, the discharge remaining about the same. Another fortnight elapsed before she again reported, with the account that her symptoms were worse, the discharge had returned, the pain had been renewed, this time with a special tendency to location in the roof of the mouth. She accounted for these unfavorable conditions by having caught a fresh cold. It was now suggested to her that the treatment would probably remain palliative so long as the exostosis was permitted to remain in position in the nose, and she was advised to permit its removal; this, however, she declined. At a subsequent date, however, she permitted Dr. R. M. Smith, who was attending my patients during my absence from the city, to attempt to remove it, in which he was entirely successful, the file-knife already described, being the single instrument he required. The discharge after this operation almost immediately disappeared, without, however, permanently affecting the neuralgic pains. which persisted when the patient last reported.[1]

Enough has already been said, I trust, to show the efficacy of the above line of treatment, in cases of nasal catarrh which are associated with occlusion of one or more points of the nasal chamber. It is seen that improvement is apt to occur at the times when such occlusions disappear. In a word, the restoration of the nasal chamber to its proper use, *i. e.*, as a respiratory chamber, is often alone sufficient to cure the disease.

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[1] Since the notes of this case were put in type, I have received a letter from the patient giving a discouraging account of her health. Both the discharge and the pain had returned. I will allow the case to stand, however, for the following reasons: In the first place, it is the only case I have met with in which the symptoms appeared to follow an injury; second, the complication of the disease with obstinate facial neuralgia, which is most probably due to secondary inflammatory changes about the deep nerve trunk; third, because of the relief which followed treatment, the patient enthusiastically acknowledging the same.

A more difficult phase of the study of nasal catarrh presents itself when the occlusion is between the inferior turbinated bone, and the floor of the nose. In this class of cases improvement is more gradual, and recurrence more frequent, owing probably to the erectile character of the mucous membrane covering this bone. The same class of remedies, however, is valuable here as in contact between the middle turbinated bone, and the septum.

As I said in the beginning of this paper, pressure or occlusion within the nasal chamber accounts for a portion only of the cases of nasal catarrh as met with in practice. A variously defined group of cases is encountered in which the nasal chambers are everywhere capacious, and yield nowhere any abnormal contact. These are probably instances, when not local expressions of constitutional conditions, due to rhinitis, fluxes, the result of structural changes in the membrane itself, or the sequence of imperfectly guarded chambers, which permit the two free ingress of irritating currents of air, and thus the membranes are continually exposed to the contact of extraneous substances, and to abrupt changes in temperature. If the last reflection prove true, it will be seen that those nasal chambers that are either too narrow or too wide, are both liable to the same general affection.

The following case will serve as an illustration of catarrh associated with a capacious nasal chamber.

Case VI.—R., age 72, reported for treatment March 11, 1879. Suffered from nasal catarrh for two years. Is subject to attacks of paroxysmal sneezing. Comparative comfort ensues for a day or two thereafter. Upon examination of the nasal chambers, found the left side capacious, no contact anywhere; the right side contracted anteriorly but no obstruction noted. The trouble is referred to the left side entirely, in which a sense of obstruction, located high up is complained of. Contrary to the rule in such cases, no point of contact or occlusion can be detected upon the most careful examination. Under applications of extract of geranium and carbolic acid with post-nasal syringe continued improvement was acknowledged. By April 2d, all the symptoms were in abeyance, although the discharge had not entirely ceased. After this date, viz., April 2d, the trouble measurably left the nose, the symptoms being chiefly referable to the pharynx.

Toward the latter part of May, geranium and carbolic acid was discontinued, and fluid extract of ergot substituted. The obstruction at the root of the nose had, by this time, permanently disappeared, the discharge lessened, though the tendency to sneezing persists, together with a marked degree of pharyngeal irritation, which latter is gradually subsiding.

The instruments above described have been expressly designed to meet the necessities of cases in which there is undue narrowing of the interior of the nasal chamber. Thus, for example, it would be difficult if not impossible for a mass of the consistence of an ointment, or a base of the consistence of gelatine, to be retained in position any length of time when the dimensions of the chamber are normal or too wide.

In ozœna, the nasal chambers are, as a rule, not only capacious, but the turbinated bones are stunted, and the elements of the mucous membrane everywhere atrophied. I mention this specially, since no structural feature has hitherto been recognized in nasal catarrh, not present in the normal chamber; and my efforts have been directed to overcome, by appropriate manipulation, the structural peculiarities which I assume to exist. They have but an indirect value in any other class of nasal affections; nor do I intend that the treatment in any case should depend upon such manipulation. The history of every individual case should be carefully considered, and the true value of local and constitutional conditions borne in mind.

I propose adding to the foregoing clinical observations a few statements concerning the variations and occasional obstruction in the nasal chambers of the skeleton. The statements are deduced from the examination of 151 adult crania. While it is acknowledged that this number is inadequate to secure a satisfactory average, it may serve as a basis for an approximate estimate, and quite enough to establish the clinical fact, viz., that variations and resultant obstructions of the chambers are often met with.

Thus, out of 58 skulls preserved in the Wistar and Horner Museum, 18 only exhibited normal nasal chambers; in the remaining 37, 19 were narrowed on the left side and 21 on the right. It is a common observation that the nasal septum is rarely perfectly straight, but exhibits a slight inclination either to one side or the other. As an equally common observation, we may repeat the fact (the truth of which many recognize in their own persons), that breathing is much freer through one side of the nose than the other.

Owing to the composite nature of the nasal septum, its errors of position are not of one kind. Thus, deviations occur in the perpendicular plate of the ethmoid bone, at the ethmo-vomerine suture, and in the superior maxilla. In the living subject deviations are also seen in the triangular cartilage; but of the soft parts I do not now speak. Deviations of the perpendicular plate occur in the form of a slight bulging, and occurs commonly in such wise that the convexity of the curve is directed to the left side. Deviation of the superior maxilla occurs in the anterior part of the palatal process near the anterior nasal aperture, and, of course, upon that portion of the bone appearing at the triangular notch of the septum. This deflection lies directly within the nostril of the subject, and is very readily seen in clinical examinations. It is always acute, and exists in many skulls where the remaining portions of the septum are straight. Deviation at the ethmo-vomerine suture takes place behind the apex of the notch for the triangular cartilage. It rarely affects the suture far back, and never does so unless in continuity with the anterior deformation. The condition is strictly one of hyperostosis at the sutural line. It is commonly directed to the left, and has been often spoken of by writers as constituting the single form of septal deviation; hence the statement that the septum is generally inclined to the left. The growth may exist, however, from the side of a perfectly straight septum, a concavity not existing of necessity upon the opposite side.

The above-mentioned forms of deviation exist together or separately. When they exist together the perpendicular plate may be deflected to the right, the ethmo-vomerine excrescence to the left, and the maxillary spur to the right, or the first two may be directed to the left, and the vomerine to the right. Thus there may be within a single nasal chamber, three surfaces of abnormal character, each of which is capable of fretting swollen mucous surfaces.

To these general statements I will affix brief descriptions of a few crania, selected from the Wistar and Horner Museum, which yield points in confirmation of the above-named clinical statements. The numbers used are the cabinet numbers:—

3918. Process at ethmo-vomerine suture marked; maxillary spur present on both sides.

268. Remarkably strong process at the ethmo-vomerine suture, which almost touches the middle turbinated bone of the right side. There is a corresponding moderate concavity on the left side. Maxillary spur present, and directed to the right.

261. Perpendicular plate nearly straight, the slight inclination present being to the left; nevertheless, a close contact exists between it and the superior turbinated bone. The middle turbinated bone is mutilated.

104. The perpendicular plate is deflected to the left, and contact exists between it and the middle turbinated bone.

90. The ethmo-vomerine growth is directed to the right, and almost touches the corresponding middle turbinated bone.

266. The deflection is confined to the perpendicular plate, and is seen on the right side. The skull is remarkable for exhibiting a small exostosis on the corresponding middle turbinated bone, which lies in contact with the perpendicular plate.

3916. The ethmo-vomerine growth is large, and touches the left middle turbinated bone.

Skull without number in Dr. Neill's collection. The ethmo-vomerine growth touches the normal middle turbinated bone of the left side.

A second skull in the same collection. The ethmo-vomerine excrescence is very large; its free surface lies within the middle meatus.

It is thus found that among fifty-eight skulls collected for teaching purposes, and not supposed to possess any unusual, much less rare features, six exhibited contact between the superior and middle turbinated bones and the septum. In two, the contact, while not demonstrable, probably existed in the living subject, and in one the process of deflection escaped contact only by being lodged in the middle meatus.[1]

In the following crania, contact existed with very slight septal deviation, or none.

247. The left superior turbinated bone touched the septum.
98. The left middle turbinated bone deflected outward, and impinged upon the descending process (*processus Blumenbachii*).
In the skull marked 96 the perpendicular plate was straight, but both middle turbinated bones almost touched the septum, and in life it is very likely they did so touch.

There can be no doubt, therefore, that contact exists in a fair proportion of individuals. Is it of necessity a cause of irritation? The correct answer to this question probably lies within the following sentences: Persons who have irritable throats, and who therefore resist examination of the oral and vocal passages, would be likely to suffer from quickly induced obstruction in the nasal chambers; contrariwise, obstruction, if of slow origin, and happening in persons who have passive oral and vocal passages, may exist without creating sneezing, pain, or even discharge. As a rule, it may be said obstruction is followed by loss of function and distress; and when such obstruction exist, it should be removed when practicable.

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[1] Only those facts bearing upon the immediate object of the paper, secured by this examination, have been placed together in the text.

An interesting group of observations is here epitomized; some of which may possibly have relations to clinical conditions which have not been appreciated:—

(1) The posterior portion of the perpendicular plate of the ethmoid bone is always exceedingly thin and often more or less absorbed, since large irregular openings are met with. In one skull this portion of the plate was almost entirely destroyed; a mere ring of bone defining the position of the parts.

(2) In two examples the two middle turbinated bones had advanced toward one another and touched in the median line through a large septal perforation. The septum being intact at the posterior nares, it would be impossible to detect such a lesion with the rhinal mirror.

(3) While the foregoing conditions are seen, the vomer at the posterior nares is never deflected, and with exceeding rarity absorbed. I have seen but two examples of such absorption, or possibly imperfect development; one of these was seen in a patient by the rhinal mirror, the other in a cranium in the Wistar and Horner Museum.

(4) While the posterior portion of the perpendicular plate tends to be absorbed, the anterior tends to become thickened. This thickening is often accompanied with a peculiar chalky whiteness, a result probably of calcification of the triangular cartilage as it joins the perpendicular plate. This feature is more marked in the skull of the white race than in negroes, in whom indeed the plate may be thin throughout.

(5) Negroes, and probably all races other than the civilized whites, exhibit few examples of depletions of the septum. Thus out of 93 negro crania examined only 20 were deflected, and but three of these to any marked extent.

(6) In one cranium the palatal bones sent up nearly half way on either side of the vomer at the posterior nares a delicate process, which materially assisted in strengthening the septum at that place.

Article IV.

Abnormal Adhesion of Funis to Placenta, with Accidental Hemorrhage and Abortion.

By Alex. Y. P. Garnett, M.D., Emeritus Professor of Clinical Medicine in the National Medical College of the District of Columbia.

The following case addresses itself to our consideration as a subject illustrating the disastrous and unavoidable results which may follow those morphological caprices of nature sometimes manifested in the progress of fœtogenesis:—

The subject of this case is a lady about 24 years of age, of delicate physique, dark complexion, above medium height, rather inclined to be thin in flesh, having suffered for several years with imperfect digestion. I had officiated about twenty-two months before at her first accouchement, which was not characterized by any circumstance of special note.

I was called to her on February 14th, and found her suffering with a slight uterine hemorrhage, which had made its appearance during the previous night, and continued at short intervals up to that hour—about 11 A. M. I ascertained that she had not menstruated since the twelfth of the previous October, and although there had been none of the usual accompaniments of pregnancy appreciable to her, she suspected that such a condition existed, as she had observed an evident increase of size, which, coupled with a suspension of the catamenia for four months, she considered sufficient grounds upon which such a conclusion might be based. A careful examination resulted in my making the diagnosis of pregnancy with accidental hemorrhage. Some simple sedative was administered, and the patient directed to rest quietly in the recumbent position until further development, or an entire cessation of the bleeding occurred. On the 22d of the same month, eight days having elapsed, I was again summoned to see my patient, who had experienced a slight return of the hemorrhage after a suspension of seven days, during the greater part of which time she had confined herself to the bed. There was no pain whatever, or any manifestation of uterine contraction, and none had been experienced at the time of my first seeing her. She was again subjected to a careful examination, which, in view of suspected pregnancy, was confined to external manipulation, auscultation of region of uterus, and digital exploration to determine condition of cervix, the result being a confirmation of my previous diagnosis, although I had failed to discover by auscultation any action of the fœtal heart. It is scarcely necessary to mention, that up to this period no motion of the child had been experienced by the mother to settle definitely the question of pregnancy. Perfect rest in bed, application of cold cloths to pubes, and digitalis and opium in small quantities were prescribed, together with light diet, absence from stimulants, avoidance of all excitements, including social intercourse.

From this date to the 14th of March she continued, at intervals varying from two to four days, to experience slight hemorrhagic discharges (although observing faithfully the directions which had been given her), but at no time of sufficient severity to require the use of the tampon. On the 14th the bleeding returned with some violence, but as yet unaccompanied by pain or any indications of uterine action. An examination, *per vaginam*, revealed a soft undilated os, well-defined cervix, with a considerable augmentation in size of the uterus, but no indications—if we except the hemorrhages—of approaching abortion. Vaginal injections of cold water and vinegar, equal parts, were used, in addition to the remedies previously prescribed. Fearing to take the chances of leaving her for the night without additional security against the bleeding, a soft sponge tampon was introduced. On the morning of the following day the tampon was removed, and the cold acidulated injections renewed. She continued during the day to have a slight oozing of blood, and as there was still an entire absence of pain I did not replace the tampon again. On the 16th she remained in about the same condition as the day previous, in good spirits, free from pain, and but little hemorrhage.

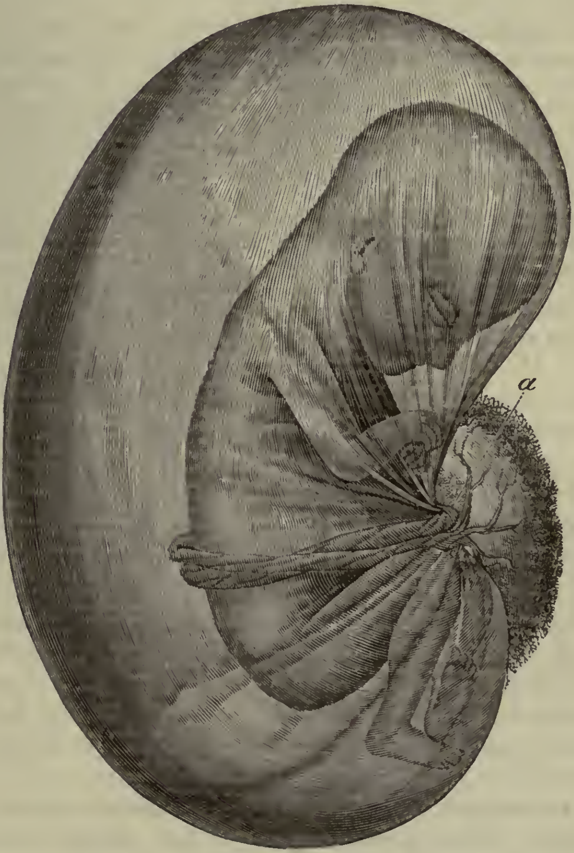
Early on the morning of the 17th, I was called somewhat hastily to visit her, finding, when I arrived, that there had been a return of the bleeding during the latter part of the night, attended with slight intermittent pain. I became satisfied that the desired denouement was at hand, and a miscarriage inevitable. Placing one hand upon the external surface of the abdomen over the womb, with the index finger of the other hand applied to the os, I could plainly distinguish feeble uterine contractions during the existence of pain. It was not until night, however, that I found it practicable to introduce my finger sufficiently, without unwarrantable force, to ascertain the presentation of a round body, which was readily recognized as a fœtal head.

From this period the pains continued with regularity, at long intervals and insignificant effect, until the following morning, when, after one hour of increased uterine effort, she was delivered of a five months' fœtus, floating within the unruptured sac of membranes, with placenta firmly attached on its fœtal aspect to the umbilical region of the child; which latter, contrary to my expectations, gave unmistakable evidence of feeble vitality. The womb contracted well after the accouchement had been completed, and the mother passed through the period of convalescence without any disturbing incident whatever.

Naturally curious to ascertain, if possible, the special cause that had produced such persistently recurrent hemorrhage, and which had finally culminated in the partial death and expulsion of the fœtus, I proceeded to examine in detail the contents of the sac, together with its adherent placenta. I regret to say that this was necessarily limited to a mere inspection and manipulation of the fœtus and its environments, as I was not permitted to remove the specimen from the house, thereby depriving me of an auxiliary examination by the microscope.

On opening the sac, and allowing the liquor amnii to flow off, I found a male fœtus of five months, much etiolated in appearance by, I presume, the limited amount of maternal blood with which it had been supplied, but in all respects normally developed. The funis, apparently healthy, was of the usual length, but had twice encircled the body of the child just above the pelvis, and apparently drawn the umbilical region of the fœtus close in contact with the surface of the placenta, between which and the cord, extending one and a-half inches from its umbilical attachment, there had been established a firm adhesion (see *a*, fig 1), so that it was impossible to move the child in an opposite direction without making direct traction upon the placenta itself. Divided at the point of adhesion most remote from the umbilicus, the remaining portion of the cord encircling the body of the fœtus was readily uncoiled, being free from other entanglements or attachments of any kind. Having detached the infant by peeling off the section of the cord which was found attached to the placenta, my attention was next directed to an examination of this latter organ. I found it about the size usually met with at this period of utero-gestation; its upper third, or that portion which had been attached nearest the fundus of the uterus, presented on its uterine aspect a dark-red glazed appearance interrupted by the usual anfractuosities here seen, having additionally numerous dark-red granular projections, or what I supposed were fibrinous clots; the remaining two-thirds had the appearance of having been recently separated from its uterine attachment, and presented, so far as an unassisted visual examination could determine, nothing unusual.

Fig. 1.



In considering the different appearance above described between the upper third and the remaining portions of the uterine surface of the placenta, it will readily occur to the reader that we might find a satisfactory explanation in the fact that it was to this section of the after-birth on its opposite side that the abnormal attachment of the funis had taken place, and a consequent premature detachment from its uterine connection had occurred, probably, at a greater or less period of time corresponding with the several accessions of hemorrhage antecedent to the expulsion of the fœtus. The accompanying wood-cut will convey an idea of the sac and its contents as they appeared at the moment of expulsion. The drawing was made from a somewhat crude sketch taken by me at the time.

After a very thorough investigation into the literature of the subject of abortion and its causes, I have not succeeded in finding any case recorded which corresponds with the above in its pathological features. I am forced, therefore, to regard it as an unusual, if not unprecedented, factor in the production of accidental hemorrhage, and the subsequent expulsion of the fœtus ab utero.

Cazeaux (*Midwifery*, 5th ed., Philada. 1868), in discussing those causes which give rise to abortion which have their origin in the placenta, says:—

> "It may be asked if the umbilical cord is too short, could it drag off or detach the placenta or even be ruptured itself? Now to the facts bearing on this point reported by Mauriceau and others, M. Guillemot adds the following: The fœtus was about three months old, the umbilical cord was tightly stretched, and even half separated, near its origin at the navel; two folds of it encircled the neck and some deep marks were left on this part from its pressure. The circulation, he continues, was therefore interrupted in the cord by the tension and compression it sustained and the strangling of the child's neck also contributed to its death. Deneux has furnished a case of the rupture of the umbilical vein and effusion of its blood into the tissue of the cord itself; he found there a clot equalling a small nut in volume which had interrupted the circulation in the umbilical vessels by its pressure." (P. 564–5.)

Bedford, in his "Principles and Practice of Obstetrics," treating of the subject of accidental hemorrhage, says:—

> "A good observer and an eminent practitioner, Dr. Robert Lee, of London, maintains with much positiveness that another cause of accidental hemorrhage is a shortening of the cord by being twisted around the neck of the child, thus inducing a partial detachment of the placenta. With all the respect I entertain for this distinguished writer, I must say that my experience does not accord with his on this point. I have seen many cases in which the cord encircled the neck of the child—indeed, it is by no means a rare occurrence—but I have never known a single instance of hemorrhage arising from this circumstance. The thing, I admit, is possible, but not very probable, and for this reason, perhaps, it may be enumerated among the causes of the accident." (4th ed., pp. 481–2.)

M. Chailly, in his work on obstetrics, published in 1844, p. 146, says: "The shortness of the cord may determine its rupture or the separation of the placenta."

It will be observed that in making the foregoing excerpts from the authors quoted, I have confined myself to those causes of abortion discussed by them, which relate directly to the case under consideration, deriving, as they do, especial importance in this connection from an approximate analogy in pathological conditions as well as a similarity in consecutive or consequential results.

In summing up the testimony presented by the authors quoted and others upon the subject of accidental hemorrhage produced by premature detachment of the placenta, we find the weight of evidence in favour of the theory that this separation may be occasioned by traction made upon the cord, and that it is possible, and frequently does occur, that such a result obtains during the early stage, as well as during the latter half of the period of gestation. The particular manner, however, in which this traction is effected seems to have escaped the notice or failed to elicit any explanation by most of the authorities upon this point whom I have consulted. They have contented themselves with a simple statement of the fact that, in consequence of a shortening of the cord rendered so by its being coiled around the neck or other part of the fœtus, the placenta is detached, the death of the child accomplished, and abortion ensue. Thus, whilst indicating the physical conditions, they fail to enlighten us as to the specific source of power through which such a result is effected. They do not (with a few exceptions) inform us whether the *fons et origo* of this force is to be found in the motions of the child; a gradual augmentation of the fœtal bulk, or any other possible source of power which may furnish us with at least a plausible theory. Reverting to the history of our case, and especially to the anatomical peculiarity disclosed by the *post-partum* examination of the fœtal attachments, we find that the first appearance of sanguineous effusion occurred on the 14th of February, but four months and two days subsequent to the termination of her last catamenial period, and that these hemorrhages continued to recur at short intervals until the 17th of the following month (March), when the mother was delivered of a five months' fœtus; the anatomical arrangements referred to being the adhesion of the umbilical extremity of the cord to the placenta and the evidences of a premature separation of a portion of that organ from its uterine connection.

Two questions naturally present themselves for our consideration at this point: First, to what pathological process are we to attribute the abnormal attachment between the placenta and cord? Second, in what manner was the force which effected the partial detachment of the placenta in this case exerted and maintained? In discussing the pathological question involved in the first interrogation we are met at the outset with what appears to me an almost insuperable difficulty to a satisfactory explanation, I refer to the fact that this adhesion had taken place between two amniotic surfaces, which it is fair to presume had been originally separated by the circumambient liquor amnii and thus kept asunder. It would seem impossible under such circumstances, even if we suppose that a phlogistic or hyperplastic action had by some cause been set up at that point, that they could be brought together and thus cemented by a sort of proliferation of connective tissue. We have no right, however, to suppose that any such antecedent inflammatory condition had occurred, as there were no traces found that could legitimately lead to such a conclusion, and as this adhesion must have antedated the detachment of the placenta, being, in fact, according to my view, the especial agent through which this separation was accomplished, we could not attribute it to a traumatic cause resulting from that particular lesion, being indeed a *post hoc* instead of a *propter hoc*. I am therefore forced, so far as my knowledge and researches in the field of pathology extend, to abandon the solution of this question to speculation.

Bearing upon the second question, Cazeaux, who, unlike most of those writers to whom I have referred, essays to explain in what manner the tension of a shortened umbilical cord is produced, says:—

> "Ruptures of the cord may occur by the *immoderate movements of the fœtus*, which movements are probably excited by the annoyance that the turns of the cord occasion it."

And, again, he uses this language:—

> "I believe therefore that a separation of the placenta may take place before or during labour, and prior to the escape of the waters, if the cord be very short and the *movements of the fœtus very active*."

It would seem therefore that he attributes the force operating through the tension of the cord and producing a separation of the placenta to "active movements of the child," which he admits may occur at early periods of utero-gestation. Whilst recognizing the weight of such high authority, and disposed as I may feel to accept so plausible a theory, in the light of the facts presented by this case, and, indeed, the admission elsewhere made by Cazeaux himself, I am not prepared to concur in this conclusion, that the separation of the placenta is due in such cases to a force which has its origin in *active movements of the fœtus*. If we are to be guided by the anatomical conditions which were found to exist in this case, it would be inconsistent with intelligent deduction to acquiesce in such an opinion. Bearing in mind the fact that the first manifestation of hemorrhage occurred just four months from the supposed date of conception, prior to any perceptible movements whatever of the child, and antecedent, in fact, to a positive knowledge on the part of the mother of her being *enceinte*, it would surely be an illogical if not a violent assumption to declare that the separation was due to *active movements* of the fœtus; but when we add to this the additional fact that the proximal as well as the distal extremity of the cord was found attached to the placenta, and the embryo so fastened to that organ as to preclude entirely any *active* fœtal movements, we are forced to reject in toto such an explanation as applicable to our case. Supposing, however, that such corporeal movement could have taken place, is it not fair to presume that the force thus exercised would have expended itself equally upon that end of the cord normally attached to the body of the placenta, and effected a complete separation instead of the partial separation which primarily occurred of that portion abnormally adhering to the cord? In the present case, however, there could have been no *active movements* of the fœtus, as the abortion took place *before* any evidence of quickening had been discovered by the mother, and at a period anterior to the development of any such mobile activity on the part of the child.

Again, I am inclined to the opinion that unless there have been some entanglements of the cord either by twisting, or with the extremities of the child, it would be almost impossible for the movements of the fœtus to produce any great degree of tension upon the cord. When we consider the fact that the embryo is suspended in a bag of waters capable of allowing the greatest facility of motion by it, a fact rendered especially familiar to us all by the practice of external version, we can readily comprehend the difficulty of making the cord sufficiently tense by the spontaneous motions of the child to produce a forcible separation of the placenta from its uterine attachment. In the present case where the funis had twice encircled the body of the fœtus in parallel lines the least force exercised upon the cord would have caused the child to rotate upon its long axis and unwound the cord from its body, had not the abnormal adhesion to the placenta prevented such rotatory movement. In the light of these facts, therefore, I am constrained to reject the opinion advanced by M. Cazeaux that the separation of the placenta in cases of abbreviated funis is due to active movements of the child.

The concurrent testimony, I have no doubt, of the most experienced accoucheurs would go to corroborate my own observation upon this point, that a majority of those cases where the cord becomes wound around the child go to full term, and the children are born alive and in good condition, notwithstanding there were all of the conditions existing which would justify us in supposing that the movements of the fœtus in utero had been most vigorous.

If we are to accept the theory that the placental separation in this case was the result of some accidental or abnormal force sufficiently powerful to detach it from its maternal connection, may we not find a rational hypothesis in attributing such force to the growth of the fœtus? When we recollect the fact that the period intervening between the first appearance of hemorrhage and the actual expulsion of the fœtus was about thirty-five days, it appears to me not inconsistent with normal physiological capability or the laws of embryological development to advance such a theory. In those cases, however, where no such abnormal attachment of the funis existed, but simply a coiling of the cord around the neck or body of the child, I am inclined to believe, when the separation of the placenta occurs, followed by accidental hemorrhage, it is the consequence of a diseased condition of that organ resulting from a compression of the bloodvessels of the cord and interruption of its normal circulation, and not the forcible traction made by the movements of the fœtus and transmitted through the cord itself.

ARTICLE V.

SUBCARBONATE OF IRON AS AN ANTIDOTE IN ARSENICAL POISONING, WITH FOUR ILLUSTRATIVE CASES OF RECOVERY. By CHARLES A. LEALE, M.D., of New York.

IN the year 1867 I was called to attend a woman who had taken a very large poisonous dose of the arsenite of copper, and desiring to employ the usually prescribed antidote, viz., the ferri oxidum hydratum as now kept specially for that purpose by a number of apothecaries, I sent three messengers to three different druggists, and from each the answer came that they had none. I then sent for the common subcarbonate of iron, a preparation so common as to be found in all dispensaries and drug-stores, and supposing it, from its composition, to be equally as good, tested its efficacy in as dangerous a case as possible for recovery to follow. It answered my expectations so satisfactorily that in three very dangerous and other minor cases, occurring during the following twelve years, I relied wholly on it as an antidote, and in every instance with the same gratifying results, and now feel assured that the past experience will cause me in the future to depend on it as being one of the most reliable if not the best antidote in arsenical poisoning.

CASE I.—Mrs. K., aged 38 years, during a time of remorse and jealous anger, took two ounces of Paris green, and then went to bed. She endeavoured to overcome the desire to vomit, but was soon in such intense agony that she in a few moments was rolling over on the floor in severe burning pain. A clergyman was sent for, and after he came a physician was thought of. My arrival was fully one hour after the poison had been taken, and I found her rolling over the floor, screaming out loudly in agonizing pain, with intense congestion of the conjunctivæ, face livid, tongue dry, swollen, and protruding, intense burning of throat, and grasping at her neck; abdomen very much distended, tympanitic, paralysis of the intestines, etc., and altogether she was in a most pitiable condition. It was with great difficulty that she could be kept long enough quiet to even casually examine her; all the time she positively refused to acknowledge what she had taken. But the symptoms of arsenical poisoning being so prominent, I first called for all the eggs I could get. Nine raw eggs mixed with a pint of water she was now forced to swallow, while her nose was held closed, and it was poured down her throat; it was soon followed by vomiting of a very green fluid, which contained large quantities of the Paris green. The messengers that had been sent to three different apothecaries for the hydrated oxide of iron returned, saying that it could not be procured. I then sent for two ounces of the common subcarbonate of iron. The vomiting continued until a large portion of the Paris green had been thrown off, but the severe colicy pains and abdominal distension plainly showed that a part had passed into the intestinal canal, and that it was constantly being absorbed.

The two ounces of the subcarbonate of iron were now mixed with a pint of water and given; most of this was retained. She was now lifted from the floor to the bed, and flannels wrung out in hot water applied to her very much bloated bowels, her knees were drawn up to relieve tension of abdominal recti muscles, and hot irons were placed at her feet. The vomiting was now controlled by giving small pieces of ice at frequent intervals, and everything was done to make her as comfortable as possible. Two hours after the iron had been given, half a pint of ol. ricini was taken, none of which was vomited, and in half an hour afterwards a copious injection was administered, which was soon followed by the iron powder and oil, and then the alarming symptoms began to subside. In about twenty-four hours nearly all the iron had been passed, but the irritation of the entire mucous membrane from mouth to anus caused continued prostration, and the gastritis and general peritonitis placed life in jeopardy for the next ten days, after which, convalescence commenced and was complete at the end of the sixth week.

Case II.—Miss F., aged 27 years, a beautiful and accomplished daughter of a prosperous farmer, was seduced, and came to this city as the mistress of a conductor, who, after giving her syphilis, cruelly deserted her. With her last remaining ten cents she purchased Paris green, ostensibly for the purpose of killing Croton bugs. The druggist gave her half an ounce of the arsenite of copper (Paris green), with the directions to sprinkle it in the crevices and places where the bugs collected. She mixed all the poison she had purchased in a teacupful of water, drank the contents, then locked herself in her room to die; but fortunately she was soon in such intense pain that her groans attracted the attention of her neighbor, who started the alarm, when I was sent for. Miss F. immediately confessed what she had done. I quickly gave an emetic of warm water, and then water mixed with raw eggs; she soon vomited a highly coloured greenish liquid containing a large quantity of the arsenite of copper. After her stomach had been effectively relieved of its contents, I gave two ounces of subcarbonate of iron mixed with cold water, which was retained, and she was placed in the recumbent position. To relieve the burning of the throat small pieces of ice were frequently given, and for the abdominal distension and colic warm flannels were applied, while the cramps of the lower extremities were relieved by one of the women briskly rubbing them and then surrounding them in flannels wrung out in hot water. The pains continuing in severity, a quarter of a grain of morphia was given, and in less than two hours she was in a comfortable sleep. The symptoms of poisoning gradually subsided, and in four hours four ounces of ol. ricini were administered and produced an operation in less than another hour, when most of the subcarbonate of iron was passed. In one week recovery was complete, and she returned to her home promising to lead a virtuous life in the future.

Case III.—Mrs. F., aged 29 years, an occasional inebriate, attempted during a fit of jealousy to commit suicide by taking one ounce of powdered Paris green, which she stirred up in a cup of water and drank, then washing out the dregs and drinking them to be certain to accomplish her desire. A lady present witnessing the occurrence ran for her husband, who came for me, and in about half an hour after the poison had been taken I arrived, and found Mrs. F. suffering intense burning pain in throat, stomach, and bowels, and refusing to tell what she had taken, but saying she wanted to die, and positively declining to take anything for her relief. Recognizing the symptoms of arsenical poisoning, I proposed an emetic, which she positively refused to take, and stated that she would die in spite of all we could do. In less than ten minutes I had sent for my stomach pump, and with the assistance of six strong adults held the woman flat on her back, with outstretched arms, and head held firmly between the knees of a woman, controlling its movements as if it were in a vice; while in this position she spat, bit, and kicked, tossing as much as she could in all directions. After completely securing her, the œsophageal tube was introduced and a mouth gag to prevent her destroying the tube with her teeth. The stomach was immediately washed out with about a gallon of water, in which ten raw eggs had been mixed. The first part washed out was the color of green paint, and plainly showed the character of the poison, viz., arsenite of copper. The stomach washing was continued until all the egg water had been used and its return presented no green trace of the poison. After the stomach had been thoroughly cleansed, two ounces of the powdered subcarbonate of iron were mixed with water, half of this was thrown into the stomach, but was very soon vomited. The remaining half was cooled by placing a piece of ice in it; this was given and retained; then small pieces of ice were given as a sedative to the stomach. The last half of the iron mixture was kept down, and in four hours eight ounces ol. ricini were given, and were followed in one hour by the usual effects, when the iron and oil could be seen in the discharges from the bowels. Half a grain of morphia was then given, and in about a week convalescence was complete.

At my second visit she confessed what she had done, saying that she first got intoxicated as a preparation to accomplish her destruction by suicide.

CASE IV.—Mr. T. T., aged 48 years, veterinary surgeon, took, while on a drunken spree, one ounce by troy weight of white arsenic (arsenious acid), then went to bed to die, but in less than ten minutes the intense pain brought fear of death and remorse of conscience. He endeavoured to vomit but failed to accomplish his object, and sent for me. I found him in a profuse perspiration and intense agony, terribly afraid of impending death and a willing subject to submit to any means proposed for his relief. I first washed out his stomach by copious drinks of warm oatmeal water, then gave two ounces of the powdered subcarbonate of iron mixed with a pint of water, followed by the frequent administration of ice to prevent further vomiting. The violent pain of stomach and bowels lasted for twenty-four hours. After the iron had supposedly done its work, it was removed from the alimentary canal by means of a copious dose of ol. ricini, and after a sharp attack of gastro-enteritis he recovered, to again in two years attempt suicide by taking laudanum, and again in three years by jumping off the end of the dock, when he was rescued by the police and sent to Blackwell's Island.

From the study of these four cases in which very large poisonous doses of arsenic were taken and recovery followed, together with a number of other cases of lesser magnitude, the following conclusions are reached as to the mode of procedure to prevent death.

1st. Quickly remove as much as possible of the poison from the stomach by means of some non-irritating liquid, viz., raw eggs with water, oatmeal water, etc., insisting on the emetic effect being rapidly produced, and if necessary use the stomach pump.

2d. As an antidote give two ounces of the powdered subcarbonate of iron, or common iron rust in fine powder, mixed with sufficient water to allow it to come in contact with the entire mucous membrane of the stomach, thereby to have the iron either absorb or surround by its mechanical affinity all traces of the arsenic. In three or four hours, give a free dose of castor oil, which will prevent impaction of the iron in the intestinal canal. Apply artificial heat by means of hot fomentations to the abdomen, and by friction promote capillary circulation. Relieve the pain by morphia. Avoid all irritating foods, and give emollient drinks until recovery follows, which, by prompt efficient action, will in the majority of cases ensue.

ARTICLE VI.

AN EXPERIMENTAL INQUIRY INTO THE VALUE OF THE CARBOLIC SPRAY AS A PREVENTIVE OF PUTREFACTION.[1] By LEWIS A. STIMSON, M.D., Surgeon to the Presbyterian and Bellevue Hospitals, and Professor of Pathological Anatomy in the Medical Faculty of the University of the City of New York.

THE great clinical merits possessed by the Lister method of treating wounds are now generally recognized. The overwhelming testimony in its favour furnished by published integral statistics of large hospital services, notably those of Volkmann, has been all the more readily accepted because corroborated by the individual private and hospital experience of surgeons everywhere. It has taken definite rank as the equal, if not the superior, so far as its results are concerned, of all other surgical dressings. But while the clinical results claimed for the method are admitted, the theory upon which it is founded has been questioned, and many objections have been urged against its alleged vexatious details, the cost, and often the inefficiency of the required apparatus.

The theory briefly stated is, 1st, that if the surface and secretions of a wound are preserved uncontaminated by living putrefactive germs, the process of repair will be carried on under the most favourable conditions, and those redoubtable septicæmic complications which have been the scourge of hospital surgery, will be entirely prevented; 2d, these putrefactive and other specifically poisonous germs come to the wound only from without, that is, by the medium of the air and of the hands and instruments of the surgeon. Therefore, the treatment of a wound on this theory must be so conducted that no living putrefactive germ shall come into contact with it or its secretions.

The methods by which it is proposed to realize this condition are based upon the germicide quality of carbolic acid, upon the alleged fact that the vitality of germs is destroyed by contact with a solution of one part of carbolic acid in twenty of water. The air is sought to be purified during the operation, and the subsequent dressings, by filling it with a fine mist of the carbolic solution, and the dressings that envelop it are charged with carbolic acid.

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[1] The results of the experiments here described were shown to the New York Surgical Society, Nov. 25, 1879.

It is not my purpose now either to consider the objections to the theory, or to discuss the question that has been so much discussed elsewhere: whether the admitted beneficial effect of carbolic acid is due to its antizymotic properties or to topical action upon the tissues with which it is brought into contact. Those are questions that must be solved by clinical observation and study. The present inquiry is limited to a single point which offers an opportunity for experimental physical examination. This point is *the efficiency of the spray as a preventive of putrefaction.*

The one detail of the Lister method which is the most individual in character, which separates the method most sharply from the many other methods which also include the use of antiseptic dressings, and which by a certain dramatic quality, by impressing the imagination, has been, perhaps, the most potent agent in inducing trial of the method, and in checking doubt of the theory and examination into the essence of the cause by which the acknowledged good results have been obtained, is the spray. At the same time no other one of the details has been so much objected to, both by those who are partisans of the method, and by those who are not. It is urged against it that the apparatus is costly and uncertain in its working; that it requires a special assistant to manage it, and involves a notable loss of time in preparing for each dressing; that the spray chills the patient, benumbs the hands of the operator, and sometimes interferes with a proper view of the field of operation. Moreover, it is a matter of daily observation, that during some periods of an operation the arrival of the spray upon the wound is prevented by the interposition of the arm or body of the surgeon, or that it is temporarily deprived of carbolic acid by the unnoticed obstruction of the supply tube. Now, if the spray is essential to the method, the items of expense and personal discomfort are not sufficient to justify us in discarding it; and if the apparatus is defective or its use unskilful they must be improved. The fact that patients have done as well when their continuous exposure to the spray during the operation has been interfered with, as they have done under more perfect conditions, is not a proof that the spray is an unessential part of the method, for germs that escape the spray itself may have been killed by the carbolic acid collected upon the surface of the wound, or the patient may have done well notwithstanding their presence, or the spray may act beneficially by virtue of some other than a germicide quality.

It is, however, as a germicide, as a preventive of putrefaction by purifying the air, that it has been devised and its use recommended. It is as such that it has been offered, as such it has been accepted, and as such we have submitted more or less patiently to its discomforts. As such, therefore, it must be judged. Not a few surgeons have refused to use it, but they have justified their refusal not by a denial of this quality in the spray, but by the adoption of measures for the destruction of the germs after their arrival upon the wound.

Some have been led to doubt whether the spray does actually possess this quality, and it has seemed to me that the question could be readily determined experimentally by taking advantage of the very well-known fact that a pure, putrescible liquid, which will remain sweet so long as it is protected from contact with impure air, will undergo putrefaction promptly after even a short exposure to such contact. If the spray is able to purify the air, exposure to impure air under the protection of the spray ought not to be followed by putrefaction. The condition, the character of the exposure, of the putrescible liquid protected by the spray is identical with that of the surface of the wound under the same circumstances; if the spray cannot prevent the putrefaction of the one, it cannot prevent the putrefaction of the other.

It is not a fair objection to say that a liquid in a test-tube differs in so many respects from the secretions of a wound that an argument drawn from the one cannot be applied to the other. They may differ widely in composition; the test liquid may be a meat or a vegetable infusion, urine, blood, or milk; but putrefaction is produced in each and all of them by the same agency, by the multiplication in them of low vegetable organisms of microscopic size. So far as that process is concerned they are upon the same level, and any minor differences that exist are likely to be in favour of the easier putrefaction of wound secretions, for they are highly albuminous and are kept at an equable and high temperature.

Nor is it proper to object that there may be specifically poisonous germs that are not putrefactive. The whole method is based upon the theory that putrefaction is the starting-point of all the complications that are sought to be avoided by its use, and if the superstructure proves unsuited to its base it is not to be supported by hypothetical buttresses that have no foundation in fact. There is not a shadow of proof of the existence of a septicæmic or pyæmic microbe which is not also capable of producing putrefaction. On the contrary, Pasteur's most striking experiments upon this subject show that inoculation of fresh meat with septicæmic virus causes exceptionally rapid and fetid putrefaction. (*Bulletin de l'Académie de Médecine*, 1878, p. 444.)

Some experiments bearing upon this point have been already published. In the *British Medical Journal*, for Feb. 23, 1878, is reported an experiment by S. Messenger Bradley showing that putrefaction may occur under the Lister dressing; but this experiment was not confined to the spray, and is not entirely beyond reproach as containing a possible source of error. He removed under the spray a piece of muscle from a leg that had just been amputated, placed it upon a piece of board, and covered it with antiseptic gauze. Four or five weeks afterwards it presented signs of putrefaction. There is nothing in the record of the experiment to show that the surface of the board had been purified, and of course the presence of a single germ there would vitiate the experiment.

In the *Bulletin de la Société de Chirurgie* for this year, page 153, M. Maurice Perrin reports a number of experiments with putrescible liquids bearing directly upon the value of the spray, but they appear to have been faulty in many points. He seems to have depended upon microscopical examination for proof of the purity of the liquids with which he experimented, and his precautions against accidental impregnation do not seem to have been sufficient.

I proposed, therefore, to purify a putrescible liquid, expose it to contact with the air under the spray for a certain period of time, then to protect it from subsequent impregnation and watch the result. To guard against possible sources of error, I employed three kinds of controlling experiments. It was necessary to be assured of three facts: 1st, that the liquid employed was pure, that it did not contain within itself at the time of the experiment germs capable of causing its putrefaction; 2d, that the same exposure without the protection of the spray was sufficient to cause putrefaction of the purified liquid; 3d, that the means employed to prevent subsequent accidental impregnation were sufficient.

The liquid employed was fresh, clear, acid urine boiled and filtered. In the first series of experiments fourteen $\frac{3}{4}$-inch test-tubes were purified by heat, and half-filled with the boiling urine. Eleven of them were then placed in a water-bath at a temperature of 212° F. and kept there for about three-quarters of an hour. (1) Two of them were then closed hermetically by melting the narrow tube into which the upper extremity of each had been drawn. This was the first controlling experiment, the object of which was to determine the purity of the liquid. The sealing of the tube would certainly prevent subsequent accidental infection, and therefore if the liquid was pure it would remain bright. (2) The three tubes which contained boiling urine, but which had not been placed in the water-bath because that was not considered necessary in this case, were left upright in a rack for an hour and a half, and then plugged with cotton wet with alcohol. This was the second controlling experiment, to show that the exposure was sufficient to cause putrefaction. (3) Three of the tubes in the water-bath were removed and closed with plugs of cotton wet with alcohol. This was the third controlling experiment, to determine the sufficiency of the precautions taken against subsequent accidental impregnation. If the liquid in these tubes remained bright it would prove that a cotton plug was sufficient to prevent the entry of germs. Three other tubes were closed with eight layers of antiseptic gauze tied over their mouths, partly as a modification of the 1st and 3d controlling experiments, and partly as a side issue to throw light upon the filtering properties of the gauze.

(4) Finally, the remaining three tubes were taken out of the bath under the spray, suspended from a rod, cooled rapidly by dipping them into water, left under the spray for an hour and a half, and then closed with plugs of cotton wet with alcohol, as in the third controlling experiment.

The spray was thrown by a medium-sized atomizer made by Gairdner of Edinburgh, the boiler of which measures 4½ by 3 inches. The quality of the spray may be estimated from the facts that all the water in the boiler except about an ounce was boiled away in the hour and a half, and 440 cubic centimetres (say 15 ounces) of a 5 per cent. solution of carbolic acid were consumed in the same time. The atomizer was at a distance of three and a half feet from the tubes and one foot above them, and during half the time a board was placed behind the tubes to throw the spray back over them.

As the weather was cold and the season advanced, I feared there might not be a sufficient number of germs in the air to make the experiment thoroughly conclusive, and therefore I swept the floor of the room so as to raise dust; this sweeping was done at such a distance from the spray as not to interfere with its direction.

Particles of dust could be seen to fall through the spray and lodge without having been wet by it. This corresponds with the familiar fact that mist collects upon clothing or upon a dry surface in small particles or drops without wetting it, and creates a presumption in favour of the opinion that germs may also come into contact with the spray without being wet by it.

The level of the experimental liquid was two and a half inches below the mouth of the tube, and as the spray caused a slight current of air across the latter, it seemed probable that dust which entered the mouth would lodge upon the side of the tube, and that the experiment might thus be vitiated by the accidental failure of the germs to reach the liquid even if they passed unharmed through the spray. I therefore dislodged with a purified rod, and still under the spray, a small filament of dust that had fallen upon the edge of one tube, and saw it reach the liquid; and I also inclined another tube so that its contents should wash its inner surface above the level of the liquid. It must be remembered that the mouth and interior of the tubes had been thoroughly purified, first by scorching and then by the boiling urine. The remaining tube was left undisturbed.

On the fourth day, November 3d, the contents of all the tubes were still clear. The weather had been cold and the temperature of the room in which the tubes had been kept was rather low, so I removed them to a closet, the temperature of which was kept at about 75° F. They presented no change the next day, and were not examined again until the 8th Nov., when the following conditions were noted. The tubes of the 1st and 3d controlling experiments had remained bright; two of those which had been exposed unprotected were turbid; and of the three exposed under the spray, the one that had received the flake of dust from the mouth and the one that had been inclined were turbid, and the remaining one was clear. It was thus demonstrated that the liquid was pure at the time of the experiment, that the plug of cotton-wool was sufficient to prevent accidental contamination, and that, consequently, as the tubes of the main experiment must have received the germs which caused them to become turbid during the time they were under the spray, the latter had not been sufficient to prevent their putrefaction.

But, as exception might be taken to the intentional introduction of a particle of dust or to the tipping of the tube, a second series of experiments was made. Instead of test-tubes, beaker glasses having a diameter of 4 centimetres, and a depth of 6½ centimetres, were used. Six were scorched and then filled almost to the top with urine that had been boiled but not filtered, and were then boiled in a water-bath for fifteen minutes; three of them were then cooled and exposed under the spray for three-quarters of an hour, and finally, with the other three, protected from accidental impregnation, by inverting over each of them a larger glass that had been purified by carbolic acid and fire. The results were similar to those of the first series. In two days the three that had been exposed under the spray had become turbid, and at the end of a week the other three, those of the controlling experiment, were still bright. On examination the turbid ones were found to be strongly ammoniacal and swarming with coccobacteria of the double, chain, spiral, and rod forms.

Thus of six glasses or tubes exposed under the spray, the contents of five had become turbid, and the preservation of the sixth seemed due to the mechanical obstacle offered to the entry of the germs by the length and narrowness of the tube.[1] The controlling experiments had shown that the precaution taken against accident had been sufficient. The conclusion seems to be unavoidable: the spray does not destroy the vitality of putrefactive germs floating in the air.

This fact being admitted, several deductions may be drawn. If the spray does not act by purifying the air, it must act, if at all, either directly upon the wound by contact with it, in some manner not now understood, or upon the instruments and hands of the surgeon as a supplement to the possibly imperfect previous disinfection they have received by immersion. The latter consideration cannot be accepted as a justification of the use of the spray, for in the first place the need is a simple assumption, and in the second place, supposing it to be a real one, it can be met by much simpler and readier means. The justification of the spray must be found, therefore, if at all, in its direct action upon the wound.

Now it is precisely in cases where the wound proper is small and insignificant, or where but a small portion of it is exposed to the spray, that the most important and significant results are claimed for the Lister method. In opening a cold abscess, for example, the parts divided by the knife may be entirely covered from the spray by the escaping pus, and in any case they are such as are daily divided without a thought of septicæmic complications; and the same is measurably true of operations for the drainage of joints or for the removal of loose cartilages from them. In such cases it is highly improbable that the spray exerts any direct action upon the wound, and the absence of putrefaction must be due to the purity of the instruments and to the continuous protection afforded subsequently by the dressings.

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[1] A week later this tube also had become turbid, the controlling tubes still remaining clear.

No one will deny that carbolic acid has an effect upon raw tissues; the change of colour and the copious secretion that follow its application to a wound have been observed by all; but if this effect is desired, it can be obtained without the aid of the spray by simply washing the wound with a strong solution; or, if it must be applied in the form of a spray, a small hand apparatus directed solely upon the wound may be advantageously substituted for the steam atomizer and its volume of mist.

To what extent this topical action of carbolic acid is beneficial, and therefore to be desired, or in what degree carbolic acid is superior or inferior to other surgical antiseptics, I do not propose here to inquire. Those questions must be judged by clinical results, and experience is rapidly accumulating upon them. I have sought to show only that the spray does not prevent putrefaction, and that consequently the theory upon which its use has been hitherto advocated is not founded upon fact.

Article VII.

Chloral Hydrate and Camphor in Toxic and Therapeutic Doses.

By D. B. Simmons, M.D., Surgeon to, and Director of, Ken Hospital, Yokohama, Japan.

The use of the syrup-like liquid, formed by rubbing up equal parts of chloral hydrate and camphor in a mortar, as a local application in neuralgia, is now generally known. The effect of this mixture on the system, however, either in therapeutic or poisonous doses, I have never seen reported. The following history of a case in which two drachms of this mixture were taken may therefore possess some interest:—

Mrs. C., æt. 40, suffering from facial neuralgia, entered the hospital June 10. On the same evening she swallowed two drachms of the chloral and camphor mixture, supposing it to be a sleeping draught which had been sent up at the same time. Immediately she began to suffer from an intense heat and burning in the throat and stomach. On the arrival of my assistant at her bedside, not more than fifteen minutes later, the patient was already unconscious, her extremities cold and flaccid, pulse slow and feeble. A large dose of ipecacuanha, being at hand, was almost immediately given, which had the effect of relieving the stomach of a portion of its contents, with some of the medicine—how much it is difficult to say. The vomiting continued at intervals during the night and following day, during which time a considerable quantity of blood was thrown up. Free salivation and an excessive discharge of mucus from the nose set in almost immediately, and continued for some days. From eight to ten dark, coffee-ground looking stools, mixed with mucus, were passed during the next twenty-four hours, but were reduced to half that number on the day following. At the end of thirty-six hours the skin had become quite warm, and the respiration, though a little slower than normal, was otherwise easy and regular. The condition of the patient, in a word, was that of a *prolonged narcotism*, from which she could be partially aroused only, so as to take water, liquid nourishment, and medicine, which she swallowed readily, probably because of the parched condition of her mouth. Occasionally she would mutter incoherent sentences, half in delirium, half in expression of her wants. This continued for four days, when she awoke as if from a dream, asked, "What had been the matter?" and then sunk back again into her former condition. From this time, however, her lucid moments became more frequent and longer, though occasional periods of mental confusion did not entirely disappear for nine or ten days. Control over movements of her extremities, which was almost completely lost during the first four or five days, by degrees returned; and on the tenth after being prostrated by the poison, she was able to walk about the room. Recovery was complete at the end of two weeks. Little was done in the way of medication.

The therapeutic use of the above mixture was suggested by the prolonged narcotism observed in the case already detailed, in which a poisonous dose had been taken. Our first trial of it was in a case of periodical mania in an inmate of the insane department of the hospital.

The maniacal attacks would occur every three or four weeks, and last from six to eight days. At these times the patient would become very violent, and for days and nights would not be quiet for a moment, often beating his head against the walls of his cell with apparently no small risk of serious injury to his skull. The ordinary routine of narcotics, including chloral, morphia, hyoscyamia, etc., had been frequently tried to no purpose. The paroxysm in which we decided to try the hydrate of chloral and camphor had already lasted three days, and was running its usual course in spite of ordinary means to prevent it. At 11 A. M. twenty drops of the chloral and camphor mixture were given in half an ounce of gum water. In fifteen minutes he became more quiet; in fifteen more lay down, and slept for two hours. On awaking he was quiet; towards evening, however, he began to show signs of his former restlessness, when fifteen drops of the mixture were administered. Again he fell into a quiet sleep, from which he awoke a few hours afterwards in the condition usual to him in the intervals of the paroxysms.

We had occasion to use the remedy several times in this case while it was under our charge, and always with the same happy result of cutting short a period of several days of violent mania.

We have on other occasions found this mixture to accomplish, as a sedative, what others seemed powerless to do. Again, however, its effects have not been so striking. We believe it especially useful in cases, as above detailed, where violent maniacal attacks are suffered from. We see no reason why it ought not to prove of service in some other serious diseases, such as hydrophobia, tetanus, and, as my colleague, Dr. Eldridge, suggested to me, in delirium tremens. The drugs, it is true, are powerful nervous sedatives alone, but it appears some additional strength is developed by their union, as ten grains of camphor or of chloral hydrate, separately, would have, we all know, about as much effect on a maniac as so much water.

ARTICLE VIII.

ON FRACTURES OF THE CRANIAL BONES. By JOHN A. LIDELL, A.M., M.D., of New York, late Surgeon to Bellevue Hospital, Inspector of the Medical and Hospital Department of the Army of the Potomac, etc. etc.

FRACTURES of the skull are among the most difficult and important objects of surgery. They are attended with very great fatality. Of 117 cases treated at the New York Hospital 96 died, and only 21 recovered (*Lente*). Of 230 cases of gunshot fracture of the cranium, which occurred in the British Army in the Crimea from April 1, 1855, to the end of the war, 170, or 73.9 per centum, died (*Med. and Surg. Hist. of British Army in Crimea, etc.*, vol. ii. p. 286). Of 4022 cases of gunshot fracture of the skull, which happened during our war of the rebellion, 2559, or 63.6 per centum, proved fatal (*Med. and Surg. Hist. of the War of the Rebellion*, Surgical Vol., Part 1st, p. 307). And of 105 cases of cranial fracture caused by falls and blows on the head, and by miscellaneous injuries other than gunshot and bayonet wounds, which also happened during our war of the rebellion, 57, or 54.28 per centum, likewise proved fatal (*Ibid.* p. 68). Moreover, fractures of the cranial bones constitute a theme of great interest to every practical surgeon, because their treatment is less clearly settled and defined than that of most other forms of injury, although they have been attentively studied by the most gifted surgeons in every age from the time of Hippocrates until the present day. Indeed, directly opposite views are entertained and expressed by prominent surgeons of our own time, concerning the utility of the operation of trephining, and of the various procedures for elevating depressed fragments in cases of cranial fracture; likewise concerning the employment of bloodletting, mercury, antimony, and other depressing remedies in treating the inflammatory complications and sequelæ of such fractures. Whoever, then, shall relate his personal observations and researches on these important subjects in a clear, impartial, and concise manner, may possibly instruct as well as amuse the thoughtful reader.

Fractures of the skull, like fractures of most other bones, may be *simple*, *compound*, *comminuted*, and *complicated*. They are not unfrequently spoken of as *without displacement*, *with displacement*, and with *impaction* of the fragments; also as *linear* or *fissured*, *stellate*, *punctured*, *depressed*, *camerate*, *gunshot*, *etc.* The following pages of this article will be made up, in great part, of cases which have passed under my own personal observation.

1. *Linear or Fissured Fractures* when restricted to the vault of the cranium are, very frequently, not discerned during life, since this lesion is not characterized by any specific symptoms. If, however, an external wound be present, the line of fracture can generally be detected without much difficulty on making suitable exploration of the wound; but, while doing this, it should be remembered that abnormal position of a cranial suture may deceive the surgeon, and lead him to mistake such misplaced suture for fissured fracture. Moreover, fissured fractures of the skull are dangerous lesions. Even when restricted to the cranial vault they not unfrequently destroy life by lacerating the meningeal arteries which run along the grooves on the internal table, thus causing the extravasation of blood in great quantity between the dura mater and the skull, and fatal compression of the brain. The following example affords a good illustration of this important point:—

CASE I. *Linear Fracture of Skull caused by a Blow on Left Temple; Death in eighteen hours from Cerebral Compression; Autopsy; Middle Meningeal Artery found Lacerated, etc.*—An unknown man, apparently of middle age, assaulted a policeman with a knife, on the night of September 9th. The officer attempted to disarm him with his club, but, failing in this, struck him smartly on the left temple also with his club. The man instantly fell senseless. He was picked up and carried to the station-house, where he lay in a state of complete insensibility, having coma and stertor, for eighteen hours, when he died. He was treated by a police surgeon. The writer examined the dead body for the coroner.

Autopsy, eighteen hours after death. The marks of recent contusion were found on the left temporal region, *i. e.*, the skin was discoloured blue-black, and there was a moderate amount of swelling having a soft feel, but the integuments were not broken. Beneath the scalp at this place some extravasated blood was found. The tissue of the temporal muscle at this spot was pulpified and infiltrated with blood. In the same region a linear fracture of the skull, without displacement, was also found; it extended downwards into the base of the cranium. Likewise, a large coagulum was met with between the bone and the dura mater, at the place of injury in the left temporal region, which flattened the convolutions, and distorted the brain-substance. It was equal to about three ounces and a half in volume, and it had destroyed life by compressing the brain. The blood which formed it had escaped from a lacerated branch of the middle meningeal artery of that side. This vessel had been torn across at the line of fracture by the springing of the broken bone which resulted from the blow. The sinuses and the veins of the brain were all full of blood. Each lateral ventricle contained a small quantity of bloody serum.

Comments.—This fissured fracture involved the left parietal and temporal bones, and extended from above downwards into the basis cranii. The blow which caused it produced also violent concussion of the brain, insomuch that the man at once fell unconscious to the ground. Soon, however, the insensibility of cerebral concussion was succeeded by the insensibility and paralysis of cerebral compression, blood was rapidly effused from the disrupted middle meningeal artery, between the dura mater and the fissured bones, so that in a short time the brain-substance was subjected to dangerous compression in consequence of the ever-increasing volume of sanguineous extravasation. In this case, then, no interval of restored consciousness appeared between the period of insensibility due to cerebral concussion and the final period of insensibility due to cerebral compression. In many cases, however, belonging to this category the symptoms of cerebral compression do not appear until the lapse of considerable time after the fracture has occurred; and in such cases the patient recovers consciousness as the symptoms of cerebral concussion depart, but loses it again and becomes hemiplegic and comatose as the symptoms of cerebral compression supervene. Moreover, in some very rare instances, a period of even two or three days, wherein the patient remains fully sensible, is interposed between the fracturing of the skull on the one hand and the occurrence of cerebral compression from intracranial hemorrhage on the other. That happened in the following remarkable example:—

Case II. *Injury of Head from being knocked down; no Loss of Consciousness; Found Dead in Bed on third Morning afterwards; Autopsy; Linear Fracture of Skull; Large Coagulum between Dura Mater and Skull, etc.*—Peter E., a lad of 15, on November 4th was assaulted by a ruffian, who knocked him down and then ran away. He got up without assistance, and walked to a neighbouring drug store, where he appeared somewhat confused from fright as well as from "stunning," but did not exhibit the symptoms of much "shock." He walked home without assistance. The next day he remained at home. On the following morning he went to his work, which consisted of covering trunks, although he said he did not feel entirely well. Nevertheless, he did a "good day's work." When he came home he complained of having a severe pain in his left ear, but got some relief from it in the course of the evening. On the next morning (November 7th), he was found dead in his bed in the posture of quiet slumber. He did not make any complaint whatever after going to bed. His mother slept in the adjoining room with the communicating door open, and she was not disturbed. Before his death it was not thought that he was seriously injured. There was no physician in attendance.

Autopsy, made by the writer, November 8th. There was an ecchymosis on his left temple; beneath this bruised spot some extravasated blood under the scalp. A fissured fracture of the skull was found in the same region; the line of this fracture passed downward and forward to the base of the cranium, in front of the meatus auditorius internus. At the place of fracture the skull was very thin. Both tables were broken, but there was no perceptible displacement. On removing the calvaria we found, at the place of fracture, between two and three ounces of coagulated blood, lying between the dura mater and the bone, and having a perfectly fresh appearance. The left hemisphere of the cerebrum was obviously compressed by this clot, for the convolutions were flattened and the surface depressed, but in every other respect the brain and its membranes appeared to be healthy. The hemorrhage had evidently occurred from the middle meningeal artery, but we failed to ascertain by even careful search what portion of that vessel had been lacerated. It is, therefore, probable that some small branch was in fault.

Comments.—This case gives rise to some very interesting queries. Was this lad's death caused by the fissured fracture of the skull? There does not appear to be any good reason for doubting it. But why did so much time elapse between the fracturing of the skull and the occurrence of cerebral compression in consequence of meningeal hemorrhage? Why did he complain so little during this interval? Why was the appearance of dangerous symptoms so long delayed? When he arose from the ground where he had fallen when struck, he exhibited slight symptoms of cerebral concussion. On the second day afterwards, however, he felt so well that he returned to his ordinary avocations, and did a good day's work. No symptoms whatever of cerebral compression had yet appeared. But on the following morning he was found lying dead in bed, and the post-mortem examination revealed lesions that had not even been suspected before it was made. It is certain that he could not have worked all day, as he did, with a mass of clotted blood, exceeding a two-ounce vial in size, pressing upon the left cerebrum. A much smaller amount of compression would inevitably have produced hemiplegia of his right side. Two hypotheses may be framed with a view to account for the strange phenomena of this case. One of them is, that the hemorrhage occurred very slowly from some small branch of the middle meningeal artery which had been lacerated by the fracture, and that the pressure of the effused blood upon the brain was increased so slowly that paralysis and other signs of arrested innervation were not developed until November 6th, after he had gone to bed. The other hypothesis is, that the fatal effusion of blood occurred suddenly on the night of his death from perforation of the middle meningeal artery by ulceration in some spot where its coats had been partly torn through by the fracture. But this hypothesis lacks the support which would have been furnished by the presence of inflammatory products in the vicinity of the fracture; for, on making careful search, I did not discover any evidence of inflammatory action except a slight loosening of the pericranium along the line of fracture. Still, I am inclined to think that this hypothesis is correct, and the slough was limited to some part of the arterial coats which had been much injured, perhaps almost torn through, by the sharp edges of the broken bone when the fracture occurred.

When blood is extravasated within the cranium in connection with linear fracture of the skull, the seat of effusion is generally found to be on the dura mater, between the bone and that membrane, as it was in the cases related above. But sanguineous extravasation in similar cases is not restricted to that locality; for, instead thereof, it may occur in the cavity of the arachnoid, and in the meshes of the pia mater and sulci of the brain beneath the visceral arachnoid membrane, as in the following instance:—

CASE III. *Injury of Head caused by Falling Down-stairs; Coma; Death in two hours; Autopsy; Fissured Fracture of Skull; Immense Extravasation of Blood in Arachnoid Cavity and underneath Visceral Arachnoid, etc.*—Thomas P., æt. about 60, was found lying on a heap of manure in a stable-alley, asleep and apparently intoxicated, on May 10th. He walked several blocks to the station-house with but little assistance. While descending the stairs to the lock-up he fell, striking on his head, but did not seem to have hurt himself much. He got up and walked to the cells. Two hours afterwards, *i. e.*, at 7 o'clock P. M., he died. He was comatose and had stertorous breathing.

Autopsy, by the writer, seventeen hours after death. Rigor mortis marked. Left eyelids blackened by contusion. On dissecting off the scalp a large bruise was found over the right temporal muscle, which extended some distance posteriorly. The skull was fractured above and behind the right ear. The fracture was a simple fissure, involving both tables, and extending into the base of the cranium, behind the meatus auditorius internus. A large quantity of coagulated blood was found in the cavity of the arachnoid membrane, and in the meshes of the pia mater underneath the visceral arachnoid. This extravasation was spread out over the whole surface of both cerebral hemispheres. The coagulum was thicker on the anterior lobe of the left cerebral hemisphere than elsewhere. The substance of the brain was considerably softened at the base of the middle lobe of the right cerebral hemisphere. The right lateral ventricle contained a small quantity of sero-sanguineous fluid. The dura mater was not injured, and no blood was extravasated between it and the cranium. The left lung exhibited in its inferior lobe numerous brown-coloured spots where blood was effused into the pulmonary tissue (apoplexy), which were due to the cerebral lesion as shown by the experiments and researches of Prof. Brown-Séquard (*Lancet*, Jan. 7, 1871).

The following example presents an instance of linear fracture of the skull and meningeal hemorrhage that was complicated with cerebral contusion and ecchymosis, and was followed by cerebral inflammation and abscess.

CASE IV. *Contusion of Head caused by Striking it against the pavement. Cerebral Concussion; Encephalitis; Coma; Death; Autopsy; Fissured Fracture of Skull; Diffused Meningeal Hemorrhage; Cerebral Convolutions Ecchymosed; Cerebral Abscess.*—Mr. C., aged about 30, was knocked down, Oct. 3d, by a powerful blow upon his breast, his head striking the sidewalk as he fell. He was picked up in a state of complete insensibility. Thirty-six hours afterwards he recovered consciousness sufficiently to tell where he lived and many of the circumstances concerning his injury. He was taken to his home, where he lingered, with symptoms of irritation and inflammation of the brain, until Oct. 9th, when he died *comatose.*

Autopsy, by the writer, twenty-four hours after death. Beneath the scalp on the right parieto-occipital region a considerable quantity of blood was found diffused in the loose connective tissue underneath the occipito-frontalis. In the same region the skull had sustained a fissured fracture, without displacement. Beneath the visceral arachnoid membrane, over all the right hemisphere of the cerebrum, blood was found extravasated in the meshes of the pia mater, so as to fill more or less completely the furrows between the convolutions of this part of the brain. Underneath the place of fracture the convolutions themselves presented a bruised or ecchymosed appearance. A black clot of blood, somewhat larger than an almond, and flattened in shape, was found at the base of the middle lobe of the right cerebral hemisphere, and the portion of the visceral arachnoid and pia mater in relation with it were so much disorganized that I could not determine whether this extravasation had occurred beneath the visceral arachnoid in the meshes of the pia mater or in the arachnoid cavity. The cerebral substance alongside this clot was much softened to the depth of nearly an inch, and so much disorganized that its natural structure could not be discerned. It was yellowish in colour and puriform in consistence. Another, but smaller, coagulum was found at the base of the anterior lobe of the cerebrum on the same side. This clot seemed from colour and consistence to have had a more recent origin than the other clot. The cerebral substance surrounding it exhibited *white* softening. The right lateral ventricle contained about two drachms of sero-sanguineous fluid, and the left about half a drachm. No blood was effused between the cranium and dura mater, and that membrane was not lacerated.

The next case is an example of fissured fracture extending across the base of the skull from ear to ear, and attended with copious effusion of blood upon the base of the brain, the medulla oblongata, and the upper end of the spinal cord.

CASE V. *Sudden Death from Injury of the Head caused by Powerful Machinery; Autopsy, etc.*—On September 19th the writer made a *post-mortem* examination of the body of Charles L. L., who had been killed on the previous day by being caught in one of the side paddle-wheels of a steamboat.

Rigor mortis strong. Left ear torn off close to the head. There was some blood in the right ear and in the nostrils, and bloody fluid was flowing from the mouth. The examination of the skull revealed a fissured fracture without displacement, extending across its base from ear to ear. A considerable quantity of extravasated blood was found about the base of the cerebellum, the medulla oblongata, the upper end of the spinal cord, and along the track of the optic nerves. The ventricles contained a small quantity of bloody serum. Upon the convex surface of the cerebral hemispheres a large quantity of colourless serum was seen beneath the visceral arachnoid membrane, in consequence of which it presented a jelly-like appearance. This effusion was more copious at the vertex than elsewhere. The presence of this transparent serum in large quantity on the convex surface of the brain seems very remarkable, when we reflect that death occurred almost instantaneously.

In each of the foregoing cases the fracture consisted of a single linear fissure or crack of considerable length, and unattended with displacement, which involved both tables of the skull. Instances, however, are by no means rare in which the fracture consists of two or more fissures or cracks, which either meet or cross each other at more or less acute angles of intersection. In the following example the fracture was composed of two linear fissures, which joined each other in such a way as to form something like the capital letter *T* in italics.

CASE VI. Sergt. A. N. was thrown from his horse, his head striking violently upon the pavement. He was taken to the hospital in an insensible condition, and, in a few hours, became delirious. He remained so until his death, which occurred four days afterwards. There was simply a severe contusion of his forehead, without any external evidence of fracture of his skull. The *autopsy*, however, revealed a three-branched fracture of the frontal bone. One fissure extended from the middle of the upper edge of this bone downward and outward through the right frontal eminence. From the upper third of this fissure another crack extended downwards, at nearly right angles, through the left frontal eminence; and this crack involved the external table only. The inner table was fissured to correspond with the first line of fracture, and there was also a short fissure branching upwards. The inner table was reticulated beneath each frontal eminence, and in the centre of the cracked plate on the left side there was a small nodule of bone, having the size of a grain of wheat. (*Med. and Surg. History of the War of the Rebellion*, Surg. Vol., Part I., p. 43.)

In the next example there was semicircular fissuring of the external table and stellate fissuring, with slight depression of the inner table, from which a long crack, involving both tables, extended directly downwards.

CASE VII. David H., aged 35, was admitted to the hospital Feb. 24, 1866, with all his toes frost bitten. This seemed to constitute all his trouble, with the exception of headache, which was attributed to constipation. During the next three days his toes improved, but the dull, heavy pain in his head continued. On the 28th he was found comatose, and slight paralysis of his right side was observed. In front of the left parietal protuberance, an incised scalp wound, an inch or more in length, was also discovered, but no other lesion of the scalp could be found. On the supposition that there was cranial fracture, a crucial incision was made in the scalp, and the flaps reflected, for the purpose of trephining, but, as no lesion of the skull could be detected, that operation was abandoned, and the incision closed. The coma and hemiplegia were then ascribed to apoplexy. On the following morning he died. At the *autopsy* a semicircular fissure of the external table of the skull was found just in front of the left parietal protuberance, and stellate fissuring, with slight depression of the inner table, including a space one inch in diameter. From this point a fissure, involving both tables, extended to the middle of the left branch of the lambdoidal suture. There were no traces of attempt at repair. Underneath the stellate fracture of the inner table, with slight depression, a small coagulum was found. The scalp wound did not correspond in position externally to the coagulum and the stellate fracture. These lesions, however, were not the cause of death. It was found on the other side of the head, and consisted of compression of the right cerebral hemisphere from meningeal hemorrhage. When the skull-cap was lifted, between two and three ounces of blood escaped from that side, still leaving a coagulum, which covered the whole hemisphere. This hemorrhage must have occurred during the closing hours of life, and to produce it some large artery must have burst. The paralysis of the right side was due to the coagulum and osseous depression which were found on the left cerebral hemisphere. (*Ibid.* p. 49.)

The fissuring of the internal table was much more considerable than the corresponding lesion of the external table in the case just related; and the fragments of the internal table were also slightly depressed. In the following example there was a good deal of depression of the inner table, while there was only a slight fissure of the outer table:—

CASE VIII. Wm. H., aged 43, was admitted to hospital May 14, 1865, with a bruise on the left forehead, received in a street fight a few hours previously. The injury was regarded and treated as a simple contusion of the scalp. On

May 20th the patient suddenly became comatose, and died on the following day. The *autopsy* revealed a slight fissure of the outer and a considerable depression of the inner table. An abscess of considerable size extended some distance beneath the frontal bone. (*Ibid.* p. 49.)

The following case belongs to the same category as the last, although the existence of cranial fracture was recognized during life. In it the outer table of the os frontis was broken without depression, *i. e.*, it was fissured, while the inner table was driven in upon the membranes of the brain:—

CASE IX. James C., aged 24, fell from his horse on July 6, 1863, receiving a wound of the frontal region with fracture, and depression of the inner table of the skull. He entered hospital July 24th in an irritable, morose, and restless condition. Three days subsequently he was slightly delirious, and respiration was difficult. In the afternoon he became completely unconscious, with insensible pupils and stertorous breathing, and death ensued in a few hours. The *autopsy* revealed a depression of the inner table of the frontal bone, and an abscess immediately beneath filled with sanious pus, and surrounded with plastic lymph. Many of the sulci were adherent, and patches of lymph were distributed on the anterior and middle lobes of the cerebrum. (*Ibid.*, p. 42.)

Comments.—Fissured or linear fractures of the cranium are not attended with depression except in those comparatively rare instances, of which we have just presented three examples, wherein the internal table was comminuted and the fragments driven in upon the dura mater; but such cases are not linear fractures in the strict sense of the term, for they are closely related to those comminuted fractures of the inner table of the skull, which are not accompanied by any fracture of the outer table. Such cases, while they seem to be linear fractures, when examined externally, are, in reality, comminuted fractures with depression of the fragments, and are liable to all the risks of suppurative inflammation of the membranes and substance of the brain which pertain to that class of injuries. Such cases, as a rule, cannot be saved without the timely employment of the trephine and the extraction of the offending splinters of bone.

An attentive consideration of the foregoing cases, however, together with many others of the same sort which are on record, clearly shows that linear fracture of the skull, properly so-called, does not often prove fatal, *per se*, but, that when life is endangered or destroyed in connection with this form of injury, it is generally by reason of some lesion of the underlying parts with which the fracture is incidentally complicated or followed, rather than by reason of the fracture itself. For example, in Cases I. and II. the middle meningeal artery having been incidentally lacerated, blood was extravasated in large quantity between the skull and dura mater with fatal effect. In Case III. rupture of some cerebral artery of considerable size incidentally occurred, with effusion of blood therefrom into the arachnoid cavity and into the sub-arachnoid spaces upon the surface of the brain itself, also with speedily fatal effect. In Case IV. the delicate tissue of the convolutions and medullary substance was bruised and ecchymosed by the same stroke that cracked the skull, and this injury of the brain-substance gave rise to cerebral inflammation and cerebral abscess, with widespread extravasation of blood beneath the visceral arachnoid membrane, which likewise proved fatal after the lapse of some days. The treatment of linear fracture of the skull, therefore, resolves itself mainly into doing what is required by the various pathological conditions with which it may be complicated, for the surgeon can arrest the tendency to death only by their removal. Now, in the several cases just enumerated, the cause of death was compression of the brain, but, at the same time, it is a fact of great practical moment that the seat and nature of the compressing force were not the same in all of them, and that they presented wide differences in these important particulars. Thus in Cases I., II., and III., the compression of the brain was caused by extravasated blood, but in Case IV. by purulent matter. In Cases I. and II. the blood was effused from the middle meningeal artery between the skull and the dura mater, while in Case III. it flowed from some ruptured cerebral artery into the arachnoid cavity and into the spaces beneath the visceral arachnoid membrane on the surface of the cerebral hemispheres. In Case IV. the purulent matter was formed in the bruised part of the brain itself in consequence of traumatic inflammation thereof.

The chief indication for treatment in all these cases obviously was to relieve the brain of compression. But, at the same time, it is easy to perceive that a remedial measure, such as perforating the skull with a trephine at the place of fracture,which might have relieved some of these cases could not have benefited the others. In cases I. and II. the sanguineous effusion was situated immediately beneath the cracked part of the skull, and being limited in extent could readily have been got at and removed by the operation of trephining; but in case III. the seat of the extravasation was underneath the dura mater, and therefore the operation of trephining alone could not have proved beneficial; moreover, if the cavity of the arachnoid had been opened by incising the dura mater at the trephine-hole it would not have done any good, for the effused blood was spread out over a wide space in the arachnoid cavity, and likewise in the sulci of both cerebral hemispheres under the visceral arachnoid membrane, so that it could not have been taken out by this or by any other operative procedure. So also the cerebral abscess in case IV. could not have been successfully evacuated by this or by any other operation.

Moreover, the surgeon's embarrassment is increased not a little in treating cases such as the foregoing, by the fact that he has no means of diagnosticating with certainty the precise seat of the extravasation or the abscess, unless he trephines the skull, and, in many cases, incises the dura mater. Now, while it is true that in a large majority of the instances where linear fracture of the skull is complicated with compression of the brain from extravasated blood, the effusion is found between the bone and the dura mater, it is also true that in a very considerable majority of all the instances where compression of the brain is caused by blood extravasated in consequence of injury, whether the skull be fractured or not, the effused blood is found not between the bone and the dura mater, but underneath that membrane in the arachnoid cavity and in the meshes of the pia mater beneath the visceral arachnoid, where it cannot be successfully reached by any operative procedure. The surgeon must therefore be able to diagnose linear fracture of the skull before he can turn these facts to any practical account. What are the signs which would enable him to recognize this form of injury? There is no depression, or displacement, or abnormal mobility of the broken bone in cases of fissured fracture of the cranium. Indeed, there is no external sign whatever by which the surgeon can recognize that lesion, short of laying the skull bare and exposing the fissure itself to view; and hence it is considered good practice by many surgeons, in cases of compression of the brain from extravasated blood where the extravasation is thought to have been caused by linear fracture of the cranial vault, to expose the bone at the place of injury by incising the scalp crucially, and dissecting up the flaps so as to bring to light the fissure if it be really present,

And, inasmuch as the diagnosis of the various lesions with which linear fractures of the skull may be complicated is involved in a great deal of obscurity and doubt, even so that kind of fracture when known to be present cannot always be treated on a fixed plan, but, generally, each case should be managed in accordance with the peculiar symptoms and peculiar features which it presents.

Firstly, the insensibility caused by concussion or contusion must be carefully distinguished from that which results from compression of the brain, which can generally be done without much difficulty, since the former appears as soon as the injury is inflicted, while the comatose stupor of compression usually does not appear until some little time has elapsed. In exceptional cases, however, the insensibility of cerebral concussion runs into the coma of cerebral compression, without the patient's recovering consciousness for one moment, as it did in cases I. and II.; and in such instances the differential diagnosis between concussion and compression of the brain becomes far more difficult. Sometimes, even in such cases, the occurrence of hemiplegia, beginning at some time more or less considerable after the casualty, and involving the side of the body opposite to the seat of cranial injury, and gradually increasing in extent and severity, may enable the surgeon to perceive the advent of compression of the brain from extravasated blood; and hence in all cases of this sort the symptoms of paralysis should be carefully sought for, and the precise time of their appearance noted, in distortions of the face and extremities of the patient.

But, as soon as the surgeon becomes satisfied that the compression of the brain is occurring from effusion of blood, he should endeavour to stay such effusion by keeping the patient at rest in bed with his head in an elevated position, by the application of ice to the head, and by venesection if his pulse is strong. The general blood-letting should be repeated if the pulse rises again before the symptoms of paralysis, or the cerebral hemorrhage which produces them; have ceased to advance. Perhaps the fluid extract of ergot, in doses of twenty or thirty minims repeated at short intervals, would also prove useful. Anyhow the administration of this remedy would, in most cases, do no harm. After the hemorrhage has ceased, the treatment should be so conducted as to promote the absorption of clot on the one hand, and to prevent the occurrence of inflammation of the membranes and substance of the brain on the other. To this end the patient should be kept at perfect rest, the application of cold to his head should be continued, the diet should be meagre, and if headache with fever or delirium or convulsions should supervene, blood should be abstracted locally with leeches or cups, and aconite in full doses, together with mercurial or saline purgatives, should be administered. If, however, these symptoms of meningitis and cerebritis should be speedily followed by profound coma and deeper paralysis, it would generally denote that the brain is suffering from fresh compression which at this stage of the disorder is usually caused by the exudation of serum from the inflamed meninges, and the employment of counterirritants, such as large blisters on the nape of the neck, and the exhibition of potassium or sodium iodide in doses of ten grains every four hours, with a view to procure the absorption of the inflammatory effusion. But if the symptoms of meningeal and cerebral irritation are followed after a longer interval, especially one of several days' duration, by the symptoms of a fresh cerebral compression, it generally denotes the occurrence of intra-cranial suppuration, and that purulent matter has been formed between the skull and the dura mater, or in the meninges, or in the substance of the brain itself; or, in other words, that there is an intra-cranial abscess from which recovery is impossible unless its contents can be discharged externally, and thus the great nervous centres become relieved from the compression it engenders.

There are, then, two distinct pathological conditions, both of which produce compression of the brain that may demand the operation of trephining as a measure of last resort in connection with linear fracture of the skull. One of them is intra-cranial abscess, and the other intra-cranial hemorrhage. When, therefore, in cases belonging to the above categories the symptoms of cerebral compression continue to grow more strongly marked and alarming, notwithstanding the employment of the various measures above stated for relief from intra-cranial hemorrhage and intra-cranial abscess, it becomes the duty of the surgeon to expose the surface of the skull by suitable incisions of the scalp at the place of injury, without further delay, and to apply the crown of a trephine over the line of fissure at the spot where the bruise is most strongly marked, or where the pericranium is found to be detached; if he fails to find blood or pus collected between the cranium and the dura mater, and at the same time observes the dura mater to bulge up into the trephine-hole, and to be destitute of pulsation and perhaps also to be discoloured, he should puncture that membrane in order to procure the discharge of the matter causing such bulging; if he still fails to find the cause of the compression, and at the same time observes the cerebral convolutions to be flattened and otherwise altered in appearance as they would be by an abscess of considerable size situated in the brain-substance underneath them, he should make a suitable incision into the brain-substance also for the purpose of evacuating such cerebral abscess. By employing the trephine and the bistoury in this manner in treating linear fractures of the skull and their consequences, the surgeon will never injure his patients, but, on the contrary, will sometimes rescue them from otherwise certain death.

Furthermore, two examples of necrosis following fissured fracture of the cranium are reported in the Med. and Surg. History of the British Army during the Crimean War. The following is a brief abstract of them:—

CASE X. Wm. W., aged 20, wounded on Sept. 8th by shell; admitted at the Castle on Oct. 24th. On examination, a fissured fracture of the upper part of the frontal bone was detected, and a portion was felt to be dead. No head symptoms were present. On Nov. 10th, the necrosed bone having become loose was removed in one piece with forceps; it was found to be a portion of the external table about the size of a sixpence, and contained a fissure in its centre into which some hair had been firmly impacted. He recovered, and returned to his duty on Dec. 20th. (*Loc. cit.* p. 289.)

CASE XI. M. C., wounded on June 7th, probably by shell; admitted at the Castle on June 17th, having a lacerated wound of the scalp, at the vertex, nearly in the middle line. The bone was bared to the extent of an inch, and fissured. He had thirst and slight heat of skin, but the pulse was quiet. The right pupil was larger than the left. On the 25th the pupils had become symmetrical, and the pulse remained quiet, but he complained considerably of headache. On the 27th, a portion of the external table was loose, and was removed with forceps. The wound healed, and he went to England apparently well on July 28th, but still complaining of headache on exposure to the sun. (*Loc. cit.* p. 289.)

In both of these cases the fissure was limited to the external table, and was followed in due time by necrosis, and it is probable that the necrosis itself was caused by the contusion rather than the fracture which the injured bones had sustained.

To briefly summarize: Linear or fissured fractures of the skull may destroy life by rupturing the meningeal arteries, thus causing extravasation of blood between the bone and the dura mater, and fatal compression of the brain; or by inducing meningitis from irritating the dura mater with fragments of the inner table that have been depressed and driven into that membrane; or, again, the same blow which cracks the skull may burst open some cerebral artery and cause thereby meningeal hemorrhage and cerebral compression of a fatal character; or the same blow that breaks the skull may bruise and ecchymose the cerebral substance also, and thus excite cerebral inflammation and cerebral abscess. Traumatic meningitis, and the suppuration resulting from it, may be either diffused or circumscribed. Among the most important of the remedial measures are rest, purgatives, the application of ice to the head, and the timely employment of the trephine, the indications for the use of which have been set forth above. Sometimes a linear fracture is followed by necrosis.

2. *Simple Fractures of the Skull with Displacement of the Fragments.*—Fractures of the cranial or of any other bones are called simple whenever the soft parts covering them do not exhibit solution of continuity corresponding to the osseous breach. Injuries of the skull belonging to this class are of frequent occurrence in civil life; and of great practical importance on account of the dangerous symptoms and disastrous consequences with which they are often attended. They occur in connection with a considerable variety of the casualties to which man is exposed. Among the most common of the causes which produce displaced fractures of the skull of a simple character, are 1. Blows on the head with clubs, slung-shots, stones, brick-bats, and various other blunt instruments; 2. Falling bodies and bodies hurled through the air striking against the head; 3. Kicks of animals; 4. Falls on the head, as happens to equestrians when thrown from the saddle; as happens also in falling down stairs, etc.; 5. Railway accidents. Fractures of the skull, in general, vary considerably according to the way in which they are produced, *i. e.*, in accordance with their causation. Thus, it was observed among our soldiers during the late war of the rebellion, that fissures or long linear fractures with little depression, as a general rule, characterized the fractures of the skull from falls or railroad accidents, while extensive splintering of the internal table was a very frequent consequence of blows from blunt instruments. (*Loc. cit.* p. 68.)

The diagnosis of this form of injury is generally not difficult. The displacement of the broken bone usually consists of depression, *i. e.*, the force which causes fracture also drives the fragments below the normal level, and in most cases the broken pieces can readily be felt to be in an abnormal position and beneath the level of the surrounding bone. There are, however, two sources of possible error against which special precautions should be taken. The first of them is found in those cases of contusion of the scalp wherein the occipito-frontalis is crushed in such a way as to afford a sharply-defined margin to the disintegrated portion that bears a very close resemblance to the margin of a depressed fracture, and the other is met with in those rare cases wherein the fibres of the temporal muscle are crushed and disintegrated in a similar manner, and with a similar result, an instance of which was reported by the writer in the No. of this Journal for April, 1879. The maxim which obtains in military affairs, viz., to be forewarned is to be forearmed, obtains also in surgery. In some cases of fracture belonging to this category the amount of depression is but slight, while in others it is very considerable as it was in the following example:—

CASE XII. *Simple Comminuted Fracture of the Frontal Bone of great extent with much Depression; Recovery without Operation.*—John S., aged about 30, of good constitution, accidentally received a tremendous blow upon his forehead from a sledge-hammer weighing fourteen pounds, on the afternoon of June 18, 1859, which struck him down to earth. He was picked up in a state of complete insensibility and carried home in that condition. On that evening I saw him shortly after dark in consultation with Dr. David W. Patrick. He then lay in bed as if asleep, breathing slowly, regularly, and somewhat stertorously. On examination we found that the hammer had struck the os frontis upon and above the right frontal eminence, contusing the scalp, fracturing the bone extensively, and depressing the fragments more than one inch by measure at the middle of the seat of fracture. We also found that the bone was badly shattered upward and backward to the neighbourhood of the coronal suture, and that a fissure with slight displacement extended downward across the superciliary and supra-orbital ridges of the same (*i. e.*, the right) side into the socket of the eye. The corresponding (*i. e.*, the right) eyelids were greatly swelled and blackened by ecchymosis. On forcibly separating the lids this eye was found to be more prominent than the left one, as if it were thrust forward by blood extravasated behind it. The right pupil was widely dilated and insensible to light. The conjunctiva of the same eye was blackened by ecchymosis. Besides contusion, the scalp suffered somewhat from laceration at the seat of fracture, caused apparently by the edges of the hammer, but the lacerations did not extend all the way through the scalp to the broken skull so as to make the fracture compound. The cavity formed by the depression of the fragments was cup-shaped, and Dr. Patrick estimated that it would hold four fluidounces, an opinion in which I fully concurred. The patient could be partially roused from the stupor in which he lay, but he sank off to sleep again directly on ceasing to disturb him. His pulse was full, regular, and beating about 110 times per minute. His surface was warm, showing that he had reacted well from the shock. I strongly suspect, however, that some whiskey had been given him before our visit. The left side of his face was paralyzed, the mouth being drawn toward the right side. The tip of the tongue when protruded turned toward the left side. The whole of the left side of his body was paralyzed as to motion, but not as to sensation. He swallowed well, but could not articulate. I was informed that the depression was observed to be considerably greater immediately after the fracture occurred than it was at the time of our visit, and that the fragments had been slowly rising.

Ordered his hair to be cut off, the seat of injury and the parts around it to be shaved, and his head to be kept constantly wet with cold water; to take internally tinct. digitalis, gtt. x every four hours, and magnesia sulph. ℥j also every four hours until his bowels should operate freely. Directed further that he should be kept at rest and free from noise, and that he should be put on a low diet. I declined to perform the operation of trephining, and likewise to attempt to elevate the depressed pieces of bone, unless the symptoms of compression of the brain should become more marked and threatening, *i. e.*, unless the coma should grow more profound.

June 19th. Stupor somewhat diminished; pulse has fallen to about sixty; in other respects the patient's condition remains unchanged; he retains urine and feces well; treatment to be continued; repeat the Epsom salt in the evening until free catharsis is obtained.

20*th.* Stupor still less than yesterday. During our visit he frequently placed his unparalyzed hand upon the fracture and upon the right side of his head, and indicated by other signs, for he could not utter any articulate words, that he had severe pain at the seat of fracture; pulse about 60;

skin in good condition. Ordered tinct. aconiti radicis, gtt. ij to be given every four hours, and a powder consisting of hydrarg. chlorid. mite gr. ½ with pulv. opii gr. ¼ to be administered every six hours; cold water to head and a low diet to be continued; rest and quietude to be carefully maintained; bowels to be moved in the evening with magnesia sulph. if they do not act spontaneously before that time.

21*st.* Patient appeared brighter, but the headache continued; the left hemiplegia remained unchanged. Ordered the aconite, the mercury, and the cold water to head to be continued; rest and freedom from noise to be strictly maintained; the secretion of urine being scanty he was directed to have spt. æther. nitros. as a diuretic; Epsom salt in the evening.

22*d.* Applied a fly-blister five inches square to the nape of his neck; other remedial measures unchanged. From this time he mended steadily.

27*th.* His headache was increased; applied a fly-blister behind his right ear. Directed the dose of calomel to be reduced to gr. ¼ every six hours, in order that salivation might not be induced: the aconite and cold water to be continued; magnesia sulph. if his bowels are not freely opened without it every day. Under this plan of treatment he steadily improved.

July 6*th.* Another large blister was applied to the back of his neck.

11*th.* A seton was inserted in the back of his neck. He was now able to sit up a good part of the time.

20*th.* He was discharged from treatment. He had recovered from hemiplegia so much as to walk with but little difficulty. His blackened and protruded right eye had resumed a natural position and appearance, and the sight had returned. No signs of facial palsy remained visible, unless he attempted to laugh, when the mouth was observed to be still drawn somewhat towards the left side. The fragments of broken bone still remained much depressed, but not so much, however, as they were found to be at our first visit. He still had much difficulty in speaking or uttering articulate words, but appeared to be cheerful and sensible.

Two years afterwards I again saw this man. His general health was very good. He had improved much in respect to speech, but he still articulated slowly and hesitatingly. More than four years after the injury Dr. Patrick reported him to be in good health; and stated further that his speech was not yet entirely restored, and that he was thought to be not quite so bright as he was before the injury.

March 8, 1879. A neighbour of this man informs me that he is well and hearty, and able to do a good day's work; and that he does not perceptibly grow any weaker in intellect.

Comments.—The history of this case illustrates very well the leading points in the symptomatology and treatment of simple fractures of the cranium with much displacement, the results of great violence.

Although the fragments of broken skull were greatly depressed or driven inward by the blow, and thus compressed the brain so much as to occasion hemiplegia, it was not necessary to raise them by any operative procedure, for they rose up spontaneously, *i. e.*, from the upward pressure constantly exerted upon them by the brain itself, most of the way back to their original position. Thus the brain was, to great extent, relieved from the symptoms of compression by the operation of natural forces, and in time adapted itself to the new condition of things so well that the hemiplegia disappeared.

The precept is also well exemplified by the history of this case which should guide the surgeon in regard to employing the trephine and elevator for the purpose of raising up the depressed bone in all strictly analogous cases. The writer deferred the employment of any operative procedure in this case, because the symptoms of cerebral compression, such, for example, as coma and paralysis, instead of growing more profound and alarming, gradually became lighter, and thus ultimately disappeared. But if, on the other hand, no improvement in these symptoms had taken place, or if the comatose stupor and the paralysis had grown more strongly marked in spite of the remedial measures that were employed, it would then have become the writer's duty without delay to expose the broken bone by suitable incisions, to apply the trephine, to raise the depressed pieces, to remove the extravasated blood, and thus to relieve the great nervous centres from a state of anæmia caused by compression which must sooner or later have proved fatal, unless these measures were employed. In other words, the operation of trephining should be practised rather as a *dernier* than as a *premier ressort* in cases of extensive comminution, such as the one just related, and mainly with a view to relieve the brain from compression which cannot otherwise be removed.

Notwithstanding the great compass of the fracture and depression of the fragments, and the great amount of injury in the shape of contusion, etc., which must have been sustained by the underlying portions of the membranes and substance of the brain, the tendency to inflammation therein was successfully combated by the employment of rest, quietude, and a low diet, by the application of cold to the head, by the administration of saline purgatives, digitalis, and aconite, and, at a later period, by calomel and opium in small doses as an antiphlogistic, simultaneously with vigorous counter-irritation by repeated blistering, and by seton. The therapeutic value of all these remedial measures became very evident and very strongly marked as this case rapidly progressed, much more rapidly than we had dared to hope, towards recovery. Moreover, after the lapse of almost twenty years, this man is still found to be free from all evidence of softening or any other organic disease of his brain, and of its membranes.

Simple fracture of the cranial vault with displacement may be accompanied by laceration of the meningeal arteries with extravasation of blood between the skull and the dura mater, by laceration of some cerebral artery with effusion of blood into the arachnoid cavity and into the meshes of the pia mater beneath the visceral arachnoid, and by contusion with ecchymosis of the convolutions and substance of the brain beneath the seat of fracture; but these topics have been so fully discussed under the head of linear or fissured fracture as not to require special consideration here.

The displacement in cases of simple comminuted fracture of the cranial vault almost always consists in depression of the fragments. The force which breaks the bone drives also the broken pieces before it. The amount of the depression varies of course with the degree of the force itself, and the way and direction in which it is applied. Sometimes, however, it happens that while the fragments are driven inward or depressed at one part of the fracture, they are forced outward or raised above the normal level at another part of the fracture, as they were in the following instance, wherein a soldier during the late war of the rebellion, received a simple displaced fracture of the frontal bone, of great extent, from a terrible blow struck by some large fragment of an exploding shell.

Case XIII. Private Augustus Z—, Fifth N. Y. Artillery, aged 35, was wounded in the head by the explosion of a shell in battle, at Spottsylvania Court House, Va., on May 17, 1864, and brought to the Stanton Hospital, at Washington, of which the writer had charge, on May 20th, three days after his injuries were received. He was still insensible. His forehead and the upper part of his face were much swollen and ecchymosed from contusion; the right half considerably more than the left. The pupils of both eyes were contracted. He lay in bed upon his back in deep stupor, from which, however, he could be partially roused by loud and repeated calls. He would then mutter a few incoherent words, and immediately go to sleep again. No part of his body was paralyzed. His respirations were deep, but not snoring, regular also, and occasionally he heaved a deep sigh. His pulse was frequent and feeble. He passed his urine in bed, without knowing it.

On examining the skull at the place of injury, it was found that a large triangular piece of the frontal bone, on the right side, was fractured and displaced, without, however, any solution of the continuity of the scalp. The skin was extensively blackened by ecchymosis. The base of this triangular piece of broken bone was constituted by the upper border of the right orbit; its apex was found at the coronal suture. The inner line of fracture extended from the internal angular process of the os frontis on the right side, upward and somewhat outward to the coronal suture. The outer line of fracture extended from the margin of the orbit, half an inch to the inner side, or within the external angular process, directly upward toward the vertex, until it met the line of fracture just described, at or near the coronal suture. This piece of bone was depressed considerably at its apex and upper part and inner side; but its base or orbital margin was pushed forward somewhat (about one-eighth of an inch), *i. e.*, it was elevated to that distance. As already stated, the fracture was not compound. The right eye was also pushed forward a good deal, and thus made to protrude, by blood extravasated into the orbit behind it. The sclerotic and palpebral conjunctivæ had a dark brown colour from ecchymosis. His head was warmer than natural. The symptoms which he exhibited were mainly those of concussion, contusion, and irritation of the brain. Ordered his hair to be clipped, the ice-bag to be kept on his head, a state of quietude to be maintained, cleanliness as to defilement with urine, etc., and a milk diet with essence of beef.

May 24th. His bowels being confined, ordered an enema.

25*th.* The condition of the injured parts remains about the same, but the pupils have become normal in size, and they contract readily on exposure to light. He still continues to lie unconscious, and swallows milk and beef-essence, as it were, mechanically. Enema to be repeated.

27*th.* The swelling and ecchymosis are gradually subsiding, but he still lies unconscious, and his pulse continues frequent and feeble.

30*th.* He opens his eyes and listens when called in a loud voice, but makes no attempt to reply.

31*st.* The swelling and ecchymosis continue to subside, but the left pupil is slightly larger than the right one.

June 1*st.* The left pupil is dilated more than it was on yesterday. The pulse continues frequent, but it is fuller and stronger, and has assumed an inflammatory character. The right eye is still much too prominent from blood effused behind it. Prescribed, pil. hydrarg. gr. ij, every two hours, extract. aconiti fluid, gtt. j, every six hours, and emplast. cantharidis to nape of neck. The ice-bag to be continued on the head.

4*th.* His bowels are confined. Ordered a saline cathartic. The left pupil is still dilated, but the amount is less. The right pupil is sensitive to light. Directed the other treatment to be continued unchanged.

6*th.* His bowels are again confined. Saline cathartic to be repeated.

15*th.* His consciousness is slowly returning. The swelling and ecchymosis have nearly disappeared. Same treatment to be continued.

26*th.* So much improved that all medication was suspended.

July 13*th.* Prescribed magnesia sulph. ℥j for relief of constipation.

31*st.* His bowels are again confined; administered magnesia sulph. ℥j. Consciousness is now completely restored, and he is bright and cheerful.

August 24*th.* His bowels have continued to be constipated since last report, and saline cathartics have, from time to time, been administered. He complains of having constant headache, and I also notice that he is slowly emaciating. Put a seton in the back of his neck.

Sept. 21*st.* He feels better, and his headache is growing less.

28*th.* His countenance is expressive of much pain in the head, and he says the headache is about the same or rather worse. He continues slowly to emaciate. His step is uncertain and tottering, and he inclines to drag his toes in walking. Renewed the seton, and prescribed: ℞. Hydrarg. chlorid. corrosiv. gr. ij; Tinct. cinchonæ comp. ℥iv. *Signa.* Take one teaspoonful, three times a day, mixed in water.

Oct. 5*th.* He continues to emaciate very slowly, but his power of locomotion is improving. Ordered the same treatment to be continued.

19*th.* His countenance now expresses less suffering, his gait is slowly improving, and he has stopped losing flesh. No change in treatment.

28*th.* He says the headache continues to grow better, and his countenance also looks better. He is also obviously improving in flesh and strength. Directed the bichloride and the seton to be continued.

Shortly afterwards he was mustered out of the service, his term of enlistment having expired, and he passed beyond the range of our observation. What ultimately became of him is unknown to the writer.

Comments.—This case resembles the last in several important particulars. Both patients were in the prime of life. Both received a simple but very extensive fracture of the right part of the frontal bone with displacement. In both the accidents which caused the fractures were of such a nature and severity that *a priori*, escape from death, occurring on the spot or soon afterwards, was scarcely to be expected. Still both patients after long-continued treatment made pretty fair recoveries.

This case also possesses several features which are worthy of special notice. For example, the broken bone was depressed at its upper and inner part, while it was displaced outwards at its inferior part or margin, a kind of displacement which does not often occur. The case is, likewise, remarkable for the great length of time wherein the patient lay in a state of more or less profound stupor, a period of more than fourteen days, and yet he recovered his senses completely in the end. During this long interval, he lay utterly unconscious, and swallowed automatically whatever was placed in his mouth.

Again, this case attests the great value which ice possesses, when applied to the head, in controlling cerebral irritation, hyperæmia, and inflammation, resulting from cerebral contusion. I believe that this man could not have been saved without the free employment of ice. As he slowly mended, the application of the ice-bag to his head was suspended several times on the supposition that further use was unnecessary, but on each of these occasions its employment had soon to be resumed, because of the reappearance of dangerous head-symptoms; and thus we were compelled to keep the ice-bag on his head almost constantly, more than four weeks, certainly a remarkable, if not an unexampled length of time for persevering in the application of ice to the head. In this way we probably prevented the occurrence of cerebral abscess, for ice when continuously applied to injured parts exerts a singular influence in the way of retarding, and preventing suppuration. I have several times seen gunshot wounds of the periarticular tissues of the knee-joint, which were treated with ice continuously applied for the purpose of preventing the spread of inflammation to the joint itself, heal by granulation with the accompaniment of but very little or of hardly any suppuration. It is unnecessary to shave the scalp or any part thereof in all cases of simple fracture when the ice-bag is to be applied, and perhaps it is even better not to shave the scalp under such circumstances, for the hair when cropped short performs very well the office of a compress interposed between the cold ice-bag and the sensitive scalp. Moreover, in all cases of insensibility where ice is applied to the head its effects upon the pulse, cranial integuments, etc., should be closely watched, lest harm be done by the incautious employment of so powerful an agent. Finally, this case shows well the great benefit that may be derived from the long-continued use of counter-irritants, and the long-continued administration of the bichloride of mercury in the way of relieving the sequelæ of traumatic irritation, hyperæmia, and inflammation of the brain and its membranes.

But the plan of treatment just described does not succeed in every case belonging to this category, for while it saves some patients who could not otherwise be rescued from the consequence of cerebral inflammation following comminuted fracture of the skull, it does not avail to save other patients similarly injured. The following example is to the point:—

CASE XIV. M. L—, aged 33, was struck on the head with a club, on July 1, 1864. He was taken to hospital the same day, and on July 4th was transferred to a hospital at Washington, of which the writer was then surgeon-in-charge. On examining him it was found that he had sustained a comminuted fracture of the right temporal bone with depression, that this fracture was not compound, and that it was not advisable to undertake any operative procedure. Accordingly, he was treated with rest, and ice applied to the head, with purgatives, antiphlogistics, counter-irritants, and meagre diet, but in spite of all this he died of cerebral inflammation, on July 14th. (*Med. and Surg. Hist. of War of Rebellion*, Surg. Vol., Part I, p. 49.)

CASE XV. James R— was struck by a stone, on May 3, 1865, receiving a depressed fracture of the skull. He was admitted to hospital on May 7th, in a comatose state. He remained in this condition until May 9th, when he was placed under ether, and had the trephine applied, and the depressed bone elevated. Good reaction occurred, and simple dressings were employed. Erysipelas supervened, but it was successfully combated by chloride of iron. The patient improved rapidly, the wound cicatrized, and he returned to duty well, on June 29, 1865. (*Ibid.* p. 59.)

CASE XVI. Patrick H. G— received a blow on the left side of the head from a slung-shot, on May 23, 1863. He was treated by a private physician until June 3d, when he was admitted into hospital. Twenty-four hours after admission he had a spasm of the right side, and, upon examination, there was found to be a depressed fracture of the skull. The scalp was laid open, trephining was performed, and the depressed portions of bone were removed. The convulsions ceased after the operation. The patient progressed favorably, and was discharged from service on Sept. 21, 1863, for hemiplegia. (*Ibid.* p. 57.)

Comments.—Both of these examples of trephining for simple depressed fractures of the cranial vault are very interesting and instructive. In the first of them the symptoms of cerebral compression were caused not by intra-cranial hemorrhage, but by displacement inward of the broken bone itself. This was clearly shown by the fact that no improvement of those symptoms was observed during the interval of six days which elapsed between the reception of the fracture and the performance of trephining, for these symptoms would have abated, at least considerably during the lapse of so long an interval, if they had been caused by blood-clot, since the absorption of much of it would meanwhile have taken place. This man's recovery was not possible, it became obvious after this long delay, until the pressure was taken off his brain, by raising up the depressed portion of bone. The rule of surgery in regard to using the trephine, etc., in cases of simple fracture of the skull with depression, should therefore be, that when the symptoms of cerebral compression have continued unchanged and undiminished for five or six days, as they did in the case above related, or for two, three or four days, according to the special features of the case, the surgeon should proceed to expose the fractured bone by suitable incisions, to apply the trephine, and to elevate the depressed portion, without longer waiting. The main point in practice is to be convinced that the head-symptoms (coma) are due to cerebral compression, and that the compression itself is produced by displacement inward upon the brain of the broken bone, before proceeding to operate. As soon as it becomes clear that the depressed position of the broken bone is the real fault, the displacement should at once be corrected, with the aid of the trephine, elevator, etc., for in such cases recovery cannot take place without such operative interference.

Furthermore, the operation of trephining should be performed in cases of simple fracture of the cranial vault, whether linear or depressed, whenever symptoms of cerebral compression from extravasated blood, such as hemiplegia on the side of body opposite to the injured side of head and stupor and stertor and coma, make their appearance after the patient has recovered more or less completely from cerebral concussion, and the extravasated blood should then be removed. In such cases the source of the hemorrhage is usually some ruptured branch of the middle meningeal artery, and the effused blood is found between the bone and the dura mater. Thus Mr. Hewett states that out of thirty-one cases of fracture of the skull, with extensive extravasation, the blood proceeded from the middle meningeal artery or its branches in twenty-seven instances (*loc. cit.* p. 256). A collection of blood between the cranium and the dura mater can, not unfrequently, be reached and removed by trephining; especially when it forms beneath the anterior inferior part of the parietal bone, a frequent site for such collections. By so doing patients can be saved who would certainly perish unless operated on. Dr. Samuel Wilks has related the following case in point, wherein trephining was successfully employed to relieve the brain from compression by extravasated blood:—

CASE XVII. *Ruptured Meningeal Artery; Hemiplegia; Trephining; Recovery.*—A man was admitted under Mr. Cock's care in an insensible condition, having fallen from a height. He gradually recovered from the concussion, and remained sensible for some time, but in the night he was found in a deep coma, with stertorous breathing, and with insensible contracted pupils. The man seemed on the point of death, when Mr. Cock determined to trephine, being guided in the choice of locality by the fact that the left arm and leg were freely moved when they were pinched, whereas not the slightest motion could be excited in either of the limbs of the right side. A large clot of blood was removed; the stertor almost immediately ceased, and on the following day the man could move his right arm and leg freely. He shortly after resumed his work, and remained well for thirteen years, except that he had some fits towards the close of life. He at last died of apoplexy. (*Guy's Hospital Reports*, 1866, p. 194.)

After what has been said above it is, perhaps, scarcely necessary to add that simple fractures of the skull with depression, but without brain-symptoms, should be let alone, and merely watched; rest, quietude, and spare living, however, being enjoined, with the applications of cold to the head and the administration of purgatives until the appearance of cerebral symptoms shows that it has become advisable to trephine, etc. Under appropriate treatment, both general and local, many cases belonging to this category make good recoveries without operation.

3. *Compound Fractures of the Skull with Displacement of the Fragments.*—Fractures of the cranial bones attended with perforating wounds of the cranial integuments extending directly down to them, *i. e.*, compound fractures, like simple fractures, are frequently met with in both civil and military practice. Gunshot fractures of the skull, with some rare exceptions, are always compound. Of 105 cases of cranial fracture, other than gunshot or sabre-strokes, but the results of injuries common to the soldier and the civilian, such as railway accidents, falls, blows, from blunt

instruments, kicks of animals, the falling of trees, and masonry, and other like casualties, which were reported during our war of the rebellion, 43 were instances of compound, 46 of simple, and in 16 cases the reports are silent regarding this distinction. (*Loc. cit.* p. 67.)

CASE XVIII. *Compound Depressed Fracture with much Comminution; Dura Mater Lacerated; Hernia Cerebri; Encephalitis; Death; Autopsy.*—John S., coloured, aged 10, died about two weeks after receiving a compound comminuted fracture of the skull, with much depression, from a block of wood thrown out of a window. Depressed fragments were elevated, and those that were loose removed. The dura mater was torn through, and the brain-substance injured. Cerebral hernia with inflammation of the membranes and substance of the brain ensued which proved fatal. The patient was most of the time unconscious, and for several days had frequent convulsions.

Autopsy, by the writer, on April 16th. There was a hole in the scalp on the left side of the head, above the ear, as large as a Spanish dollar. There was also a hole in the skull as large as a half dollar. The dura mater was penetrated by an opening through which the brain protruded. The physician who attended deceased informed me that he removed thirteen pieces of the skull shortly after the accident, some of which had been driven through the dura mater. On removing the skullcap it was found that the dura mater adhered to the bone around the place of fracture more strongly than elsewhere. The superior longitudinal sinus contained a long cord-shaped coagulum of fibrin, having a yellowish-white color. In the longitudinal fissure of the brain a considerable quantity of purulent matter was found spread over the free surface of the visceral arachnoid membrane, and likewise diffused beneath that membrane in the meshes of the pia mater. The pus in the pia mater constituted a lamina underneath which the cortical substance of the brain exhibited more or less softening. About the optic foramina, the base of the cerebellum, and the medulla oblongata an abundant quantity of purulent matter was found on the free surface of the visceral arachnoid. The lateral ventricles contained a large spoonful of sero-purulent effusion. The plexus choroideus was much thickened by exudation having a semi-purulent appearance. The left hemisphere of the cerebrum was much disorganized beneath the seat of fracture down to the lateral ventricle. There was extensive loss of substance, and the portion of it that had not escaped was completely broken down in the neighbourhood of the fracture. The portion of it in the neighbourhood of the lateral ventricle was diffluent and discoloured with blood.

Comments.—The so-called fungus cerebri in this case obviously consisted for the most part of brain-tissue disorganized by the inflammatory process, or of a new morbid outgrowth therefrom. With regard to fungus cerebri we may state generally that in a large majority of the cases the protruding mass, when examined microscopically, is found to contain no nerve-fibres and no nerve-cells, but to consist mainly of granular matter, so that ere the brain-tissue itself is extruded, it has generally become extensively disorganized by the inflammatory process.

The cause of death in this case was suppurative inflammation of the membranes and substance of the brain. The membranes principally involved were the arachnoid and pia mater; and it is a rather curious circumstance that the meningitis spread to the ventricles and involved the plexus choroideus. Meningo-cerebral inflammation, or encephalitis, is a very frequent cause of death in the cases of cranial fracture that are met with in civil as well as in military practice. Thus of 57 fatal cases of cranial fracture produced by the common accidents of civil life, that were reported during our war of the rebellion, encephalitis was the cause of death in *ten*, and abscess of the brain in *six* instances, making altogether 16 cases wherein the inflammatory sequelæ of cranial fractures proved mortal (*loc. cit.* p. 67). Patients belonging to this category, however, are sometimes saved by trephining. The following example illustrates well this point.

CASE XIX. Jesse S., coloured, aged 18, rolled, while asleep in a stable loft, and fell some twelve feet to the floor, striking on his head. He was found in the morning on the floor cold and insensible. Under the use of restoratives he revived, and was carried to hospital. There it was found that he had compound depressed fracture of the right parietal bone; but, as the patient's general condition was favourable, sensibility being restored, and mental faculties normal, it was decided to await further developments. For twelve days nothing of importance occurred, when he complained of increased headache, and a few hours subsequently had severe convulsions. On the next day he was about the same as usual, except that his headache was increased. Then, under ether, the original wound was enlarged, the trephine applied, and a disk of bone removed, to which most of the depressed fragments were attached. On removing the bone, pus gushed out copiously. At the upper posterior part of the perforation the inner table was detached three-fourths of an inch more than the outer. This fragment was, with some difficulty, removed with strong forceps. After the operation he complained of intolerable pain for which morphia in very large doses was administered. His diet was restricted to bread and milk in small quantities. In three days after the operation the brain commenced to protrude, and by the tenth day the protrusion had acquired the size and shape of half a hen's egg. To reduce the protrusion a compress and retentive bandage were applied, but violent convulsions immediately ensued; and although this dressing was instantly removed, violent convulsive paroxysms recurred during the night, not less than fifteen or twenty times. On the next day the patient was hanging between life and death, but he rallied gradually, and, strange to say, he had no more pain in his head after the convulsions subsided. Convalescence proceeded rapidly; the protrusion subsided; a dense cicatrix covered the aperture in the skull; and the patient recovered without impairment of mental faculties or motor powers. (*Loc. cit.* pp. 59, 60.)

Again, compression of the brain occasioned by the depressed fragments of the broken skull is another cause of death in cases of cranial fracture, which is frequently met with in civil practice. For example, out of the 57 fatal cases of cranial fracture produced by accidents that are common in civil life, mentioned above, compression of the brain from fragments of bone was likewise the cause of death in 16 instances (*loc. cit.* p. 67). But, patients belonging to this class are not unfrequently saved by the timely performance of the operation of trephining. Of two cases of this sort brief abstracts are given.

CASE XX. A. B. P., received a lacerated wound of the frontal region with fracture and depression, from the kick of a horse. He was admitted to hospital on the same day in a semi-comatose condition. Soon after admission the operation of trephining was performed, and the depressed bone raised. He soon reacted. Tonics, stimulants, and low diet were ordered. He gradually improved, and was discharged cured thirteen months after injury. (*Loc. cit.* p. 58.)

CASE XXI. Henry B. fell a distance of twenty-four feet, striking upon the vertex. A scalp wound four inches long and fracture of both tables of the skull with depression for a space two inches in diameter, were produced. On admission to hospital his pulse was imperceptible, and he lay groaning occasionally, his lower limbs moving spasmodically. The trephine was applied, but the depressed portion of bone could not be raised. A portion of the fractured skull was then removed with Hey's saw; after which the depressed portion was raised to its normal position, and the periosteum was brought back over the solution of continuity of the bone. The wound was then dressed with cold water. The after treatment was of stimulant and tonic description, with careful attention to bowels, and occasional opiates. Fifteen days after the operation, the patient was walking about the ward. The wound of the scalp was united: and a small spot over the trephined part was healing by granulation. (*Loc. cit.* pp. 55, 56.)

In the last case the depressed fragments were impacted so firmly and to such extent that it cost a good deal of trouble to elevate them. Besides these two examples, the Medical and Surgical History of our War of the Rebellion contains reports of eight additional cases in which cerebral compression caused by the depressed fragments of compound fractures of the skull, not produced by gunshot or sabre-stroke, but by common accidents, was successfully treated by surgical operations. In five of them the trephine was employed; in the other three the depressed fragments were raised with the elevator, or extracted with forceps, after enlarging the scalp-wounds by suitable incisions.

Furthermore, compression of the brain from extravasated blood is still another cause of death in cases of cranial fracture, which is frequently met with in civil practice. For example, of the 57 fatal cases above mentioned, that were reported during our civil war, where the fractures were not produced by gunshots nor by sabre-strokes, but by common accidents, compression of the brain from extravasated blood was the cause of death in 16 instances (*loc. cit.* p. 67). It is a singular coincidence that of these 57 fatal cases of cranial fracture, just 16 perished from inflammation of the membranes and substance of the brain, just 16 also perished from cerebral compression occasioned by the depressed fragments of bone, and just 16 likewise died of cerebral compression from extravasated blood. But patients who were in a bad way from effusions of blood between the skull and the dura mater, formed in consequence of lacerations of the middle meningeal artery or its branches, the result of cranial fractures, have sometimes been saved by perforating the skull with a trephine at the seat of the hemorrhage, and removing the effused blood. One instance belonging to this category we have already related (CASE XVII.).

Four successful cases of similar character are given by Quesnay in his observations upon the use of the trepan in doubtful cases (*Memoirs of the Royal Academy of Surgery*, Sydenham Soc.'s Ed., pp. 8, 12, 14, 21, 22).

A *fifth* case: Abernethy operated successfully on a boy, aged 14, hurt by falling on his head from a scaffold, and brought to hospital in apparently a dying state, with depressed fracture of anterior inferior angle of the parietal and part of the frontal bone. He applied the trephine and found a large quantity of coagulated blood underneath the bone, which he completely removed after applying the trephine three times. The lad recovered his senses, and all the symptoms of compression passed away. (*Essay on Injuries of the Head*, pp. 24–27, London, 1797.)

A *sixth* case: In the year 1839, a man was struck with a spade just over the anterior inferior angle of the right parietal; and when he came to St. George's Hospital a few minutes afterwards, a compound fracture with depression of a small piece of the skull was detected, but there were no cerebral symptoms whatsoever. Shortly afterwards, however, the patient became heavy and stupid; and coma was gradually supervening, when Mr. Keate arrived, and at once proceeded to remove the depressed bone, whereupon a jet of blood spirted out from a large branch of the middle meningeal artery, and all the symptoms of compression were immediately relieved. (*Holmes's Surgery*, vol. ii. pp. 257, 258.)

A *seventh* case: In the year 1842, there was another case of the same kind at St. George's Hospital under the care of Mr. Tatum, in which the operation of trephining was equally successful. (*Ibid.* p 258.)

Moreover, the examples furnished above show pretty clearly what the indications are for resorting to the use of the trephine in order to relieve the brain from pressure caused by blood effused between the skull and the dura mater, in cases of cranial fracture. They are the occurrence of coma after the symptoms of cerebral concussion have more or less completely passed away, especially when hemiplegia on the side of body opposite to the injured side of head, simultaneously appears; also, the continuance of coma and hemiplegia long after the symptoms due to cerebral concussion have disappeared, although the period of cerebral concussion has not been separated from that of cerebral compression by any intervening period of restored sensibility and consciousness. Sir Benjamin C. Brodie says:—

> "Blood is seldom poured out in any considerable quantity between the dura mater and the bone, except in consequence of a laceration of the middle meningeal artery, or one of its principal branches; and it is very rare for this accident to occur, except as a consequence of fracture. If, therefore, we find the patient dying in a state of stupor, and, on examining the head, we discover a fracture, with or without depression, extending in the direction of the middle meningeal artery, although the existence of an extravasation on the surface of the dura mater is not thereby reduced to absolute certainty, it is rendered highly probable; and the surgeon, under the circumstances, would neglect his duty if he omitted to apply the trephine; and where no fracture is discovered, yet, if there is other evidence of the injury having fallen on that part of the cranium in which the middle meningeal artery is situated, the use of the trephine may be resorted to on speculation, rather than that the patient should be left to die without an attempt being made for his preservation." (*Med. Chir. Trans.*, vol. xiv. p. 385.)

In such cases the blood-clots are generally found to be dense and tough. But should the symptoms of cerebral compression arise from traumatic extravasation of blood in the arachnoid cavity, they will be the same as those of blood collected on the outer surface of the dura mater between that membrane and the bone; and a surgeon may thus be led to apply the trephine on the supposition that the effused blood is in this situation. And now, supposing the trephine to have been thus applied, and no blood found between the skull and the dura mater, still the blood in the arachnoid cavity may chance to lie immediately under the spot, and the dura mater, of a bluish colour, may bulge up into the trephine-hole. Under such circumstances, blood in the arachnoid cavity has several times been let out by incising the dura mater, and the patient saved. When, however, there are no indications that the blood in the arachnoid cavity is under the trephine-hole, there is nothing to justify the surgeon in proceeding further. (*Prescott Hewett.*)

The dura mater should never be opened by the surgeon except for some very grave cause. Sir Benjamin C. Brodie, while assenting to this view, also held that there are some rare cases of sanguineous extravasation into the arachnoid cavity where puncturing the dura mater is positively demanded by the surgeon. He says:—

> "We may regard it as a general rule, that an operation is not applicable to cases of compression of the brain from internal extravasation. But there are few general rules in surgery to which some exceptions may not be made. Let us suppose a case in which a considerable portion of bone has already been removed, in which the dura mater is seen exposed, of a blue colour, lifted up by a collection of blood beneath it, and bulging, as it were, into the aperture which has been made in the cranium. Are we justified in puncturing the dura mater for the purpose of allowing the extravasation to escape? Everything that we see of wounds of the dura mater tends to prove the very great danger of this kind of injury. The dura mater should never be wantonly punctured; but we cannot doubt that, in what may be regarded as desperate cases, it must be right to give the patient the chance, small as it may be, which the division of the dura mater affords him. The combination of circumstances which would lead to such an operation must be very rare, but it may occur, nevertheless, and the surgeon should be prepared to meet it."

In support of this opinion he cites two cases:—

An infant of eighteen months, under the care of Chevalier, from a blow on the head, lay insensible, and was convulsed. There was no wound, but, the fontanelle appearing somewhat elevated, Chevalier raised the scalp from the membrane that forms it, and exposed the dura mater, beneath which the purple colour of the blood was plainly seen. He therefore made a careful puncture: "The blood issued at first with considerable force, spouting to the distance of a foot; three or four ounces of blood escaped; the symptoms were immediately relieved, and the child recovered." The other case was that of a woman who, having fallen down the stairs of a cellar, came under Ogle's care. He found her without wound, and lying as if in a fit of apoplexy, but "she flinched very much when pressure was made on one spot near the anterior superior angle of one of the parietal bones." He incised the scalp, and trephined the skull. "The dura mater, of a dark colour, rose into the opening nearly as high as the external surface of the cranium." He punctured it; this proceeding "was instantly followed by a stream or jet of blood which spirted out to the height of some feet. Immediately, on the blood being discharged, the woman, who until that moment had continued totally insensible, opened her eyes. After looking about her apparently amazed, she exclaimed, 'What's the matter? what are you doing with me?' and was able to give a clear account of the manner in which the accident occurred. From this time she recovered without any untoward symptom." (*Loc. cit.* pp. 388–391.)

In cases of cerebral compression, where the blood is effused between the skull and the dura mater, however, the extravasation is usually found to be thickened into a coagulum which is dense, tough, and hard to be removed. So much, then, concerning the very great frequency with which depression of the broken fragments, intracranial extravasation of blood, and traumatic inflammation of the membranes and substance of the brain, are found to be the causes of death in cases of compound fracture of the skull in civil life; also concerning the operative procedures which we should employ in order to relieve the brain from fatal compression in such cases, together with the indications for their use.

But what is to be done in those cases of compound depressed fracture of the cranium where we find no symptoms of cerebral disturbance when we are called? Are we to operate at once, or await the development of threatening symptoms? The rule is, that we are to operate without delay. Compound fractures of the skull with depression very frequently lead, as shown by Sir Astley Cooper and Sir Benjamin C. Brodie, to intracranial suppuration; and hence the rule laid down by these celebrated surgeons that we are to operate in order to prevent the impending mischief. (*Med. Chirurg. Trans.*, vol. xiv. pp. 401, 402.) To this rule, however, some exceptions ought to be made. A slight depression, especially when it corresponds to the thicker parts of the injured bone, generally does not require an immediate operation. Neither does a deep in-driving of the bone over the frontal sinuses; but here it should be remembered that these sinuses do not begin to form until several years after birth. And when a compound fracture with depression does not come under the surgeon's care until some days after the accident, he generally should, if there are no signs of meningo-cerebral inflammation, delay to operate, and try other remedial measures; and all the more readily, if the depression is broad, and the fracture comminuted. From such injuries the patient sometimes recovers without the occurrence of intracranial inflammation. But in cases where the fracture is a punctured one, where sharp splinters of the inner table are driven down upon or into the dura mater, inflammation of the invaded parts, sooner or later, is almost invariably excited thereby. Of all compound fractures of the skull, the punctured fracture is on this account the most dangerous, and the one which most imperatively demands the prompt use of the trephine, and the elevator, and the bone forceps. (*Prescott Hewett.*) Several cases of punctured fracture, in which the trephine, etc., was successfully employed, will next be related.

CASE XXII. *Punctured Fracture of Left Parietal; Trephining; Recovery.*—T. M., aged 36, had on a soft hat, and was standing up in an iron mine, when a stone weighing about four pounds fell a distance of forty feet, and struck him on the head. He says the blow stunned him for a moment, but he did not become wholly insensible. The wound bled very freely for several hours. He had no nausea, or vomiting, but found he could not hear so well as usual. Ten days after the accident he was admitted to St. Vincent's Hospital, New York, where the writer saw him, at Prof. Gouley's instance, several times. Up to this time there had been no marked symptoms. On examination a small scalp-wound was found on the prominence of the left parietal, about three-fourths of an inch in length. The bone was fractured an inch in length and half an inch in width, and depressed about one-eighth of an inch. On the second day after admission, Prof. Gouley trephined the patient, and found the inner table injured more extensively than the outer. The scalp bled very freely during the operation. For nearly three weeks the patient had no bad symptoms, when pain in the injured part of head became quite severe, followed with all the symptoms of cranial osteo-myelitis. Wet cups were applied to the left temple with some relief. The eye on the affected side was congested. The wound gradually filled up with granulations, except in one direction, where a probe could be passed under the pericranium for nearly three inches. The symptoms of osteo-myelitis gradually subsided, and the pericranium became again attached. The wound was nearly healed, no bone came away by exfoliation, although quite a large surface had been denuded. He left the hospital two months and one week after admission. I am indebted to Prof. Gouley for the foregoing account of his case. I think that potassium iodide, in full doses, was also administered for the cranial osteo-myelitis, and with benefit.

CASE XXIII. *Punctured Fracture of Left Parietal; Trephining; Recovery.*—D. C., 32 years of age, had on a soft hat, and was standing about seven feet from a building, which was sixty feet high, when a slate weighing about five pounds fell off the roof and struck him on the head. He fell on his knees, but did not become wholly unconscious. He soon recovered from the shock, had but little hemorrhage or pain, and no vomiting.

One week after the accident, he was admitted to St. Vincent's Hospital, N. Y., where the writer saw him several times at Prof. Gouley's instance. On examination a scalp wound was found on the prominence of the left parietal bone two inches in length, and the outer table was found to be slightly depressed, about one-sixteenth of an inch. Prof. Gouley trephined him on the second day after admission. The skull was extremely thick. The inner table was not depressed, but had on its inner surface a fissure about half an inch in length. There was but very little hemorrhage during the operation. No bad symptoms followed for about two weeks, except slight headache, and the wound made considerable progress toward healing. At this time a small portion of the outer table became loose and was taken away. Considerable of the pericranium became detached from the bone around the trephine hole. The headache became severe and continued for several days. Wet cups were applied to the left temple with some relief. The symptoms of cranial osteo-myelitis continued for weeks. When the pericranium began to attach itself to the bone again the headache gradually subsided. The wound was nearly healed when he left the hospital, two months lacking six days after admission. I am also indebted to Prof. Gouley for the foregoing history of this case. I likewise think that potassium iodide in full doses was administered to this man for the cranial osteomyelitis, and that it was beneficial.

Comments.—These two cases resemble each other very strongly. In both, the injury was caused by stones of similar weight falling from a great height, and striking upon the left parietal eminence, *i. e.*, upon the thickest, most arched, and strongest part of that bone. These peculiarities of the part of the bone that happened to be struck, account satisfactorily for the comparatively small amount of splintering which was sustained by the inner table in each instance. In both cases the operation of trephining averted the risk of meningo-cerebral inflammation which was feared. In both cases this operation was not followed by any troublesome symptoms, excepting some that were quite accidental, and were due to inflammation of the medullary tissue of the injured part of the parietal bone, which was caused not so much by the operation itself as by the foul air of the hospital wherein the men were treated. This complication would not have occurred in private practice, nor under the antiseptic plan of after-treatment. Moreover, it did not prove fatal.

The bad effects of hospital air upon cases of trephining were noticed as far back as the time of Quesney. It is stated incidentally in one of the observations published by that eminent writer, that the operation of trephining "seldom succeeded at the hospital, on account of the unwholesome state of the air" (*op. cit.* p. 11). In the following instance the inner table was broken to a much greater extent than the outer, and the fragments thereof were found to be driven inward much further than the external fragment, with a blood clot interposed between them.

CASE XXIV. *Punctured Fracture of Right Parietal; Trephining: Recovery.*—John R., aged 41, on July 17, 1865, received four wounds of the head from stones thrown at him. On the following day he was admitted to hospital. He was perfectly sensible, but had marked contraction of the pupil with accelerated pulse and tremulous voice. There was considerable ecchymosis about the orbits. Three of the wounds proved to be mere scalp wounds. The fourth, however, was on the right parietal eminence; and, upon close examination, a minute depression of the bone, one-third of an inch in diameter, was discovered, evidently produced by a blow from the sharp edge or angle of a stone. His scalp was divided with cruciform incisions three inches long, having the original wound at their junction, the flaps reflected, the crown of a trephine applied, and a disk of bone, seven-eighths of an inch in diameter, removed, which was found to include, with remarkable exactness, a depressed fragment of the vitreous plate. Between the diplöe and the depressed lamina there was a coagulum. The dura mater was uninjured. The wound of operation was drawn together with sutures, leaving an aperture, however, over the trephine-hole, into which a pledget of charpie was inserted. The patient was ordered to observe perfect quiet and strict diet. The case proceeded without an unfavourable symptom. On July 23d the sutures were removed. On 24th the pledget of charpie was taken away, and healthy granulations appeared beneath. The man recovered without a bad symptom, and was discharged from service September 8, 1865. (*Loc. cit.* p. 59.)

Comments.—In this case the piece broken off from the inner table was several times larger than the piece broken off from the outer table, since its principal diameter was seven-eighths of an inch while the corresponding diameter of the latter was only one-third of an inch. It was also depressed much more than the external fragment, and a clot of blood occupied the space between them. It pressed upon the dura mater in such a way as to produce symptoms of cerebral irritation, viz., marked contraction of the pupils, with accelerated pulse and tremulous voice. It pressed upon the dura mater in such a way that, in all probability, it would have excited fatal meningitis, but for its timely removal by operation. This case, then, serves to illustrate, in a very gratifying manner, the good that may be derived from trephining punctured fractures of the cranial vault, at an early period, and without waiting for the development of inflammatory symptoms. In the next example meningitis supervened, and the case progressed from bad to worse until trephining was performed.

CASE XXV. *Punctured Fracture of Right Parietal from falling upon a Nail; Dura Mater pierced and Brain wounded; Convulsions and Profound Coma; Trephining; Recovery.*—An infant, aged 12 months, became impaled on Sept. 20th, at 6 P. M., by falling headforemost upon a tenpenny nail, and considerable force was required to pluck the child away. At 7 o'clock, Dr. J. L. Van Ingen saw the case. The pulse was frequent, but there was no other important symptom. Upon exploring the wound it was found that the nail had pierced the skull upon the right parietal eminence, and penetrated the head to the depth of two and one-quarter inches. At midnight the child vomited, and had slight general convulsions, which lasted about half an hour. The rest of the night the child slept naturally.

Sept. 21*st*, at 9 A. M., was called in consequence of the return of unfavourable symptoms. About this time vomiting came on again, and convulsions on the left side, which continued until about 10 o'clock, when the muscles of that side became paralyzed, except those of the face, which continued to be convulsed until half-past 10 o'clock, when the child became insensible, and commenced sinking.

Dr. Van Ingen now advised trephining to remove the small fragment of bone displaced by the nail, on the ground that it produced unfavourable symptoms by acting as an irritant; but a consultation decided that the operation was unwarrantable, and held out no reasonable hope of benefit, *first*, because so small a piece of bone as the end of the nail displaced could not produce such grave symptoms; *secondly*, because the brain of a child could readily accommodate itself to much greater pressure; and, *thirdly*, because it was probable that the convulsions, coma, and sinking were not due to the irritation produced by the minute portion of displaced bone. Indeed, it was regarded as improbable that any displacement existed, for even if the inner table had yielded to the pressure of the nail, it was supposed that, from its great elasticity at so young an age, it had resumed its natural position. The symptoms were, therefore, attributed to the penetration of the nail into the substance of the brain to so great a depth.

The child continued to sink rapidly. At noon the skin was cold; there was no pulse at the wrist, and but little in the carotids. Dr. Van Ingen again urged the operation; and those before opposed to it now consented, on the ground that the child would certainly die, and that the operation, if it did not save it, would only shorten its life an hour or two. The patient was perfectly insensible, the breathing scarcely perceptible, and the incisions of the scalp were apparently unfelt. When the bone was fully exposed a small irregular aperture therein was discovered, sufficient to admit the passage of the nail, the sides of which gradually approximated each other at the bottom, the nail having entered obliquely. Upon removing the depressed portion of bone with the trephine, the child became sensible, the muscles on the left side of the face commenced twitching, then those on the whole left side of the body, and, immediately after, those on both sides of the whole body were affected with a slight convulsive movement; the pulse returned at the wrist, the heat to the skin, and the child recovered the free use of its limbs except the left arm which remained partially paralyzed.

The wound was then dressed, the patient was removed to a dark and quiet room, to secure the brain against irritation from light and noise. At midnight the child had a slight convulsion—gave morphia sulph. gr. $\frac{1}{16}$—and the remainder of the night it slept soundly.

22*d*. The day after the operation the use of the arm was perfect.

28*th*. The patient was removed to the family room, and the wound healed entirely in about three weeks. No further medication was used after the morphia on the first night after the operation, with the exception of one drachm of castor-oil and the application of rum and water to the head.

April, 1854. The child is healthy; has never had fits, spasms, or spasmodic actions of the muscles since his recovery from the operation in September, 1847. (*New York Journal of Medicine*, May, 1854, pp. 378–381.)

Comments.—By the operation of trephining this little patient was saved from certain death. On this point there is no room for doubt; besides, the performance of the operation ought not to have been obstructed by the consultation, for every moment of delay rapidly diminished the chances of recovery; as it was, the little patient had a very narrow escape, although the performance of the operation was delayed for only an hour and a half, or two hours at most. This case, then, serves well to show not only the great value of trephining as a remedial measure in cases of punctured fracture of the cranium, but likewise the great danger which may result from deferring its performance.

The extreme youth of this patient reminds one of something which possesses practical importance, viz., depressions of the skull of infants can sometimes be removed by putting on cupping-glasses. On this point Prof. Eve says: "I have heard of no less than three cases of depressed skulls in young children relieved by exhausting the air from a cupping-glass placed over the portion of the cranium driven below the surrounding level. One instance occurred in Europe, the second is recorded by Dr. Moultrie, of St. Johns, S. C., and the third was mentioned to me by my colleague, Prof. Briggs." (*Remarkable Cases in Surgery*, p. 48.)

When operating for depressed fractures in general, the main object is to elevate or remove the sunken pieces of bone. Now, if this can be accomplished with the elevator alone, so much the better. Should this not be feasible, then we must try to obtain sufficient room for the elevator by removing a slice of the sound bone overhanging the depressed fragment; and this is to be done by Hey's saw, if possible. The trephine should be resorted to only when its employment is indispensable; and in trephining for depressed fracture, care should be taken to remove as little bone as possible; but, in our anxiety not to remove too much bone, we must be especially careful and make ourselves perfectly sure that no irregular margin of the inner table is left behind pressing upon the meninges. In looking over the skulls in our different museums, it is curious and most instructive to observe how frequently a sharp edge of the inner table has been left depressed. (*Prescott Hewett.*)

The following rather remarkable instance of penetrating wound of the head, involving the scalp, the skull, the meninges, and the brain itself, is here related, because of the resemblance which this injury is supposed to bear to punctured fracture of the cranium:—

CASE XXVI. Jacob F., æt. 23, was admitted to Bellevue Hospital Sept. 4, 1867. On the night of admission the patient was struck on the head with a pocket-knife. The blade entered the skull one inch in front of the left ear and one inch above the zygomatic arch, and penetrated its entire length, two and one-half inches. On admission he complained of a sense of numbness in the head, dimness of vision in the left eye, and partial deafness in left ear. Much effort was required to remove the knife, so closely was it pinched by the bone. A pair of bone forceps were applied to the handle, and while two men held the patient's head, the house surgeon and his assistant made strong traction by means of the forceps. The knife finally came away; considerable hemorrhage followed; the temporal artery was severed. The patient was ordered to remain quiet in bed, and a compress was applied over the wound. No bad symptoms were developed, and the patient was discharged, at his own request, five days after the receipt of the injury. Partial deafness of left ear and partial paralysis of left side of face, but no dimness of vision remained. I have not been able to learn what happened in the end to this patient, but he did not return to the hospital, and his case was not the subject of coroner's inquest, at least so far as I could find, which circumstances tend to show that he recovered, although they by no means make it certain.

In the next case the cranial vault received a fracture from a spent ball, very like in appearance to many of the fractures which are produced by the rounded corners of stones when falling from some considerable height or when hurled with some considerable force against the head (*e. g.*, Cases XXIV., XXIII., XXII.), and which are usually termed punctured fractures. The depressed splinters of the inner table were neither elevated nor removed, as no operation was performed, and thus remaining in contact with the dura mater, they kindled an inflammation in the meninges which proved fatal. This case of punctured fracture of the skull from gunshot will serve well to show the course and termination of punctured fractures of the skull in general, unless the broken pieces of the inner table are removed by operation. The writer watched the progress of this case with deep interest.

CASE XXVII. G. W. Bricker, 10th Pa. Reserves, aged about 25, received at the battle of Fredericksburg, Va., on Dec. 13, 1862, and was admitted to Stanton Hospital therefor on Dec. 14th, a scalp-wound on the left parietal bone near its anterior border about one inch in length, which was inflicted by a canister shot, and extended down to the skull. No depression was detected. The injury was judged to be slight, and the patient appeared to progress favourably till nine days after the injury, and eight days after admission to hospital. On this day he complained of intense pain in the left or injured side of his head; was feverish, restless, and complained of being disturbed by noise; pulse accelerated and skin hotter than natural; pupils natural, and he protruded his tongue well. He now said he had had some headache ever since admission.

On the 23d at 10 o'clock P. M., he had a chill, and another at 3 o'clock A. M., on the 24th. At the morning visit this day he was somewhat delirious; pupils natural; some insensibility of right side of body was also noticed. A blister was applied to nape of neck, and free catharsis induced. In the afternoon of 24th he had recovered his senses to all appearance, and had certainly recovered the sensibility in his right inferior extremity which he seemed to have lost in the morning.

25*th.* The case is thought to be complicated with malarial fever, and quinia in full doses was ordered as an anti-periodic. The patient was still able to walk.

27*th.* Has ceased to have chills and fever.

30*th.* Much worse, and lies semi-comatose; pulse slow and feeble; bowels open; no chill since 25th. A small swelling of the scalp was noticed just anterior to the wound, which, on being opened, was found to contain some dark-coloured blood. From this time the patient gradually grew worse till January 4th, when he died comatose: no convulsions having occurred at any time in the progress of his case.

Autopsy.—The external table of the left parietal bone is seen to be indented by a bullet with a circular depression half an inch in diameter just behind the coronal suture. On removing the calvaria the inner table is seen to be irregularly fissured and depressed half a line. About an ounce and a half of bloody pus had collected between the dura mater and the cranium at the place of fracture. A layer of pus had also been formed on the inner surface of the dura mater in the arachnoid cavity in same situation. The brain itself presented no morbid appearance. There was no lesion of Peyer's patches. Other organs healthy. On examining the osteological specimen after it was thoroughly cleaned, it was quite remarkable to observe that several of the fragments of the inner table were firmly reunited, although the patient had survived his injuries only twenty-two days.

Comments.—The inner table, in this case, was broken more extensively than the outer table, and the sharp splinters of it were depressed enough to prick and irritate the dura mater, thereby producing inflammation of that membrane. The first step in the treatment of this patient, therefore, should have been the fulfilment of the causal indication, *i. e.*, the timely removal of the offending splinters of the inner table, which could easily have been accomplished by the operation of trephining. The fatal issue of the case and the morbid conditions disclosed by the autopsy show that, without trephining, this man's recovery was impossible. Why, then, was this operation not performed? It happened, firstly, because the existence of a cranial fracture was unknown. Careful examinations of the scalp-wound repeatedly made by myself and others had failed to detect any lesion of the skull. The indentation of the external table was so slight that it escaped observation. Secondly, malarial fever supervened, and the symptoms which it produced masked the symptoms of traumatic meningitis, and caused us to mistake the stupor of a cerebral compression resulting from the products of meningeal inflammation for the stupor of typho-malarial fever. Moreover, he improved very much in every way under liberal doses of quinia, and this circumstance tended to lead us still further astray in our views of his case, until the results of the autopsy set us right, by showing us that there was punctiform fracture of the skull with slight depression and circumscribed inflammation of the dura mater with a large collection of purulent matter between that membrane and the broken part of the skull. The case was, therefore, a very favourable one for successful operation with the trephine, if the differential diagnosis could only have been made in season; and I have deeply regretted ever since that I did not follow the promptings of a sort of surgical instinct which strongly inclined me to operate as a remedial measure of last resort, instead of obeying the dictates of a too cautious conservatism.

The history of this case, then, presents in a strong light the disastrous consequences which commonly ensue, when, from any cause, the rule of surgery which requires depressed fractures of the skull with external wound, but especially the punctured forms thereof, to be remedied by operative procedures at an early day, is not strictly followed out in practice. Moreover, it is the solemn lesson taught by this case which more than aught else has impelled the writer to discuss with so much earnestness and copiousness the question of trephining in fractures of the cranial vault.

Article IX.

Fatal Intestinal Obstruction by Gall-Stones. By Frank Woodbury, M.D., Physician to the German Hospital, Philadelphia.

Contrary to the general observation that, in cases of biliary colic, the attack is terminated when the gall-stone is discharged into the intestinal canal, it will exceptionally happen that the concretion causes further pain and annoyance in its passage down the small intestine; or, it may even be so large as to block up the tube, and, becoming impacted, cause fatal obstruction of the bowels.

The causation of gall-stones is still unsettled, and their law of development little understood, although Murchison[1] notes the frequent coexistence of the uric acid diathesis, and Dr. George Budd believed that their development might be connected with the drinking of porter, which, it is well known, also favors the occurrence of gout. Like the gouty diathesis the tendency to gall-stones may be hereditary. Whatever, may be their pathological source, or their predisposing cause, it is evident that their formation is greatly favoured by the complex constitution of the bile, in which fatty and resinous substances, lime-salts, and cholesterine are held in a state of unstable solution in the mucus principally by the aid of sodium chloride, phosphate, and carbonate, and the sodium salts of the biliary acids. Should a change of composition occur, and to this no secretion in the body is more subject, some of these insoluble substances may be deposited either in the bile passages or in the gall-bladder itself. In the former situation the sabulous material is probably, as the rule, discharged into the intestine and lost; in the latter position its escape is opposed by the peculiar spiral and crescentic folding of the mucous membrane lining the cystic duct, and it is, therefore, frequently retained to act as a nucleus upon which the crystallization of cholesterine may take place, or other constituents of the bile deposited.

The prevalence of gall-stones excites surprise that they do not give trouble oftener than they actually do. It is by no means an uncommon event in the post-mortem room to discover concretions, even of large size, that gave no symptoms whatever during life, and whose existence even was entirely unsuspected. It is also a matter of common observation that the gall-bladder becomes remarkably tolerant of these bodies, and concretions of considerable size may remain, innocently encapsuled as it were, for a long time without causing irritation. Dr. Thorowgood[1] presented to the Pathological Society of London, a biliary calculus 2¾ inches in length, which weighed 503 grains, and which was taken from the body of a woman of 67 years, having produced no symptoms whatever during life. A case is also reported by Dr. Lessdorf,[2] of a woman 58 years of age, in which the gall-bladder was filled by a stone weighing 60 grammes, and Meckel[3] has reported one found in the gall-bladder, measuring 15 by 6 centimetres [in circumference?].

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[1] Functional Diseases of the Liver, London, 1874.

Before a biliary calculus attains such large proportions as those in the cases just referred to, however, it ordinarily happens that some effort is made by the parts to expel it, either through the cystic and common ducts, or by ulceration through the coats of the gall-bladder into the bowels or the stomach, or externally through the abdominal wall by successive adhesive inflammation and ulceration. Should the regular performance of this process be interfered with, the stone may escape into the peritoneal cavity, giving rise to fatal peritonitis. When the stone descends through the ducts, dilating them in its downward progress, the ordinary symptoms of biliary colic are presented; when, on the other hand, it is discharged by ulceration, the process may be so slow that it may be unsuspected until the abscess points externally, or the stone is evacuated by the alimentary canal, but, as a rule, at some time in its course, acute symptoms are present, calling attention to the right hypochondriac region. Dr. H. Jeaffreson[4] reports a case in which a patient vomited a large gall-stone, which, it was afterwards found, had ulcerated through from the gall-bladder into the stomach. Gall-stones are not infrequently discharged by ulceration into the large intestine, and in the Transactions of the New York Pathological Society,[5] Dr. John M. Beekman reports a case of a woman of 40 years of age who died of peritonitis; two gall-stones (112 and 143 grains) were found in the gall-bladder, from which a perforation led into the transverse colon where a third stone was detected (weighing 183 grains). Small concretions, however, may gradually ulcerate through the cholecystic wall and become encysted in the neighboring structures without giving rise to general peritonitis, as in Dr. Cowpland's[6] patient, where the gall-bladder was found after death, to be filled with small calculi, and two or three more were found on the under surface of the liver in old peritoneal adhesions.

In other cases the passage of the stone is accompanied by symptoms suggesting hepatitis. Niemeyer[7] mentions an instance of this, where the lady subsequently brought to him a stone, passed by rectum, which was so large that it could not possibly have passed by the ductus communis choledochus, and Dr. Tulkampf[1] communicates a case where a stone weighing 204 grains was passed in like manner by a man of 50 years, who had never been confined to his bed, but was occasionally jaundiced; and remarks that the stone must have ulcerated through into the colon.

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[1] British Medical Journal, Feb. 24, 1872.

[2] Betz's Memorabilien, Sept. 1876.

[3] M. Perls, Lehrbuch des Allgemeinen Pathologie, Stuttgart, 1877, p. 212.

[4] British Medical Journal, 1868, p. 531.

[5] Vol. i. p. 249.

[6] Lancet, vol. ii. 1876, p. 894.

[7] Text-Book of Practical Medicine, N. Y., 1874, vol. i. p. 704.

Such cases are not rare in the reports of liver diseases, but it is unusual to have the stone pass by successive adhesion to and through the abdominal wall, as in the case reported by Dr. Schelling,[2] where a calculus the size of the first joint of the thumb was discharged in this way.

This reference recalls the relation existing between some cases of perihepatitis with hepatic abscess, and gall-stones. In such a condition the aspirator would yield only temporary relief, and in cases of persistent discharge from such an abscess, the possibility of the existence of gall-stones at the bottom of the sinus suggests itself, and indicates the only method of treatment capable of yielding permanent relief.

Fatal peritonitis, occasioned by the extrusion of a gall-stone into the cavity of the peritoneum, sometimes occurs, as in a case under the care of the writer recently. A German, fifty-three years of age, suffered with cancer of the quadrate lobe of the liver, involving the gall-bladder, which likewise contained a number of gall-stones. Under the influence of the malignant disease, ulceration of the gall-bladder occurred, and fatal peritonitis ensued from the escape of some of the concretions. After reaching the intestine, a gall-stone may lodge in the cæcum or vermiform appendix, or even become sacculated in the small intestine, and there cause inflammation and perforation, cases in illustration of which may be found in all the text-books.

Although Rokitansky[3] has declared that a calculus the size of a hen's egg may pass through the bile ducts, the weight of opinion is in favor of the view that, as the rule at least, such large concretions can only escape from the gall-bladder by ulceration through its walls. Abercrombie,[4] however, reports a case in which a stone measuring four by three and one-half inches was believed to have passed by the natural channel. Dr. A. P. Stewart[5] referred to a lady who passed a gall-stone as large as a pigeon's egg, after some abdominal pain occasionally felt during two days. "It was almost certain that this had passed through the ductus communis."

In rare cases a large stone may pursue a very chronic course, and, on its way to the bowel, it may become arrested in the common duct for a long time without passing into the duodenum or giving rise to acute symptoms. Dr. J. S. Ramskill[6] reports a case of jaundice lasting two and a half years, where a large stone was found in the common duct, which was so much distended that the gall-bladder could not be distinguished. The passage of bile, however, had not been entirely prevented.

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[1] Lancet, 1876, vol. i. p. 250.

[2] Lancet, 1860, vol. i., p. 251.

[3] Manual of Pathological Anatomy, Phila., 1855, vol. ii. p. 130.

[4] Quoted by Leichtenstern in Ziemssen's Cyclopædia, N. Y., 1876, vol. vii. p. 574.

[5] Lancet, 1871, vol. ii. p. 638.

[6] Lancet, 1876, vol. i., p. 379.

Having attained the small intestine by the ordinary, or by an extraordinary, channel, the gall-stone now forms a variety of *intestinal* concretion, and may cause further trouble by becoming impacted, producing fatal obstruction, of which a number of cases are on record.

The following notes of a patient seen by my friend, Dr. Thomas H. Andrews of this city (to whom I am indebted for the history of the case), in consultation with Dr. G. R. Sullivan, of Flemington, New Jersey, will prove of interest:—

Mrs. B., 60 years of age, while in good health apparently, was suddenly seized, on the afternoon of August 15, 1878, with violent cramping pains in the abdomen, persistent vomiting, and prostration, only relieved by a full hypodermic injection of morphia, following which she had a good night's rest. The next morning the abdomen was tender and distended, tongue slightly coated; patient easier, but vomiting at intervals. Bowels obstinately constipated, notwithstanding the administration of two bottles of citrate of magnesia during the night, and ten grains of calomel given through the morning, in two-grain doses every two hours. Hot poultices of hops and corn-meal were kept upon the abdomen, with the effect of partially relieving the pain. The succeeding morning (17th) the abdomen was soft and not tympanitic; very slight pain on pressure. The bowels had not been moved. Vomiting continued, and the fluid ejected had now become of a dark inky colour. No nourishment had been taken since the beginning of the attack, except tea. She did not now complain of pain, and was only annoyed by the persistent vomiting. She slept from time to time under the influence of morphia, but the retching returned at intervals. On the morning of the 18th the patient was weak, but had no pain. Laxative enemata were freely used, but no evacuation of the bowels was obtained. She died exhausted on the morning of the 19th, eighty hours after the onset of the malady. No jaundice was observed at any time during the illness.

Autopsy.—Liver enlarged and fatty; the neck of the gall-bladder was softened and patulous, tearing easily, its fundus contained some gall-stones. A hard substance was discovered distending the jejunum at its upper portion just below the duodenum, fitting the intestine as tightly as a finger does a glove; below this point the intestines were contracted, above it they were distended by gas and fluid. The mucous membrane of the stomach was congested, softened, and easily scraped off; it was studded with small ulcers, especially in the neighbourhood of the pylorus.

The concretion was about the size of an English walnut, elliptical in shape, resembling in form and colour a small white potato. Upon section it was seen to consist of brown, friable, cortical substance, enveloping a dense, white, crystalline body as large as a cherry, which was evidently cholesterine. The following report was furnished by Dr. Wm. H. Greene, Demonstrator of Chemistry at the University of Pennsylvania, to whom it was submitted for chemical examination:—

"The biliary calculus is nearly pure cholesterine. The central part or nucleus is quite pure; the external layers contain much bile pigment and some earthy matters.

"The circumferences of the stone in its three principal directions were 76, 82, and 89 millimetres, respectively. Its weight was 7.270 grammes, and its specific gravity a little less than that of water.

"Chemical examination demonstrates the following constituents:—

		Per cent.
Cholesterine		88.5
Colouring matters	sol. in chloroform	2.0
	sol. in alcohol and ether	0.5
Mineral salts (phosphates, etc.)		1.7
Water		1.5
		94.2

"The remaining six per cent. must be attributed to bile products insoluble in alcohol, chloroform, ether, or dilute hydrochloric acid, and for which the small quantity of material at my disposal precluded examination."

Cases of fatal impaction similar to the above have been reported by Partridge,[1] Palmer,[2] Stewart,[3] Habershon,[4] Abercrombie,[5] Murchison,[6] Elliott,[7] and a number of others. The one herewith communicated differs from most of the recorded cases, however, in the locality of the obstruction; the general experience being that the stone is arrested in the lower part of the ileum just above the ileo-colic valve, while in this case it was impacted at the beginning of the jejunum. A similar case of obstruction from biliary calculus in the upper part of the jejunum thirty inches from the pylorus, came under the care of Dr. E. P. Smith.[8] The patient, a stout woman of 62 years, had slight biliary colic for two weeks, and then commenced to vomit bilious fluid, and she secreted very little urine. Five days later she became comatose. After death a calculus measuring 4½ by 2½ inches in circumference was found impacted in the situation named. An ulcerated opening extended from the gall-bladder into the duodenum. Dr. Barlow, in *Guy's Hospital Reports* for 1844, reports a case of a woman of 51 years who had symptoms of gall-stones for a year. Just before her death excessive pain, vomiting, and constipation came on, with scanty urine and collapsed abdomen. About the centre of the ileum there was found a biliary calculus of the size of a walnut partially sacculated. Dr. Metcalfe,[9] however, presented to the New York Pathological Society a specimen taken from a man 54 years of age, where the *duodenum* was filled with gall-stones in such a way as to entirely prevent the passage of food from the stomach. Dr. George Harley[10] also records a case in which a gall-stone became encysted in the duodenum.

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[1] Lancet, 1849, vol. i. p. 210, from the Provincial Medical Journal.

[2] Boston Medical and Surgical Journal, 1857, p. 357.

[3] Transactions Med.-Chir. Soc. London, 1872.

[4] Ibid.

[5] Quoted by Leichtenstern, *loc. cit.*

[6] Clinical Lectures on Diseases of the Liver, London, 1868, p. 509.

[7] Medical Press and Circular, 1872.

[8] Pathological Society's Transactions, London, 1854.

[9] Transactions N. Y. Path. Soc., vol. ii. p. 3.

[10] Path. Soc. Trans., London, vol. viii.

In 32 cases collected by Leichtenstern, the gall-stone occupied the duodenum and jejunum in 10 cases, middle of ileum in 5 cases, lowest part of ileum in 17 cases. Diminution of urine is insisted upon by Mr. Barlow and others as evidence that the obstruction is located in the upper portion of the small intestine. Moreover, the tympanites, which is a marked symptom of occlusion lower down the tube, may be entirely absent when the impaction is situated high up in the jejunum. According to Habershon, vomiting occurs earlier, and is more decidedly bilious in character, when the obstruction lies in the upper part of the intestinal canal.

Death may ensue from inanition, as in the case above mentioned, or from ulceration and perforation, as in Le Gros Clark's[1] case, or in that of Jeaffreson.[2] There is not the slightest doubt that some of these cases might have been saved by the early performance of abdominal section, with full antiseptic precautions; and it is probable, since such favourable results have been recently obtained in cases of volvulus and invagination of the bowel, that there will be less hesitation about resorting to it in future. The uncertainty will still remain, however, in any given case of operation, as to whether ordinary measures might not eventually have succeeded in dislodging the stone and causing its passage into the large bowel. Sir Thomas Watson[3] speaks of a case of a lady who suffered with all the symptoms of impaction, and who experienced a sensation as if the obstruction had been displaced after manipulation of the abdomen by three medical men. Soon afterwards the bowels were moved, and the next day she passed a gall-stone as big as a walnut. MacLeod[4] reports a very interesting case of a farmer's wife who had suffered with frequent attacks of gall-stones. She came under observation on the tenth day of constipation (obstruction?), having been vomiting for several days, but without persistent retching. The belly was slightly tympanitic and tender. The urine was normal and freely secreted. After two doses of calomel (fifteen and ten grains) she passed a mass of gall-stones (sixteen were counted), about the size of two walnuts when aggregated, and several were passed subsequently. She made a good recovery. In a case recorded by Dr. T. S. Gray,[5] a large gall-stone led to obstruction and stercoraceous vomiting, but was subsequently discharged by the rectum, and the patient, a man of 40, recovered. Leichtenstern[6] indeed states that recovery may take place after symptoms of strangulation have existed for several days, and even stercoraceous vomiting has appeared; and points out the fact that the result does not depend so much upon the size of the stone as upon its shape, a long cylindrical form being more favourable than a round one.

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[1] Med.-Chir. Transactions, vol. lv. p. 1. [2] Brit. Med. Journal, 1868, vol. i. p. 531.

[3] Lectures on Practice of Physic, vol. ii. p. 465. Quoted by Thudichum on Diseases of the Liver, p. 526.

[4] British Medical Journal, 1876, vol. ii. p. 675.

[5] Transactions of the Clinical Society of London for 1873.

[6] Ziemssen's Cyclopædia, *loc. cit.*

In cases where decided impaction exists, medical treatment by saline purgatives, and calomel, large emollient injections of warm sweet oil or linseed tea, aided by manipulation through the abdominal walls, having failed in dislodging the gall-stone, it would seem to be perfectly justifiable to cut down upon and remove it, as recommended by Ashhurst;[1] the case to be treated subsequently as one of ordinary wound of the intestines. It may be found after opening the abdominal wall, in the usual manner, that the concretion can be dislodged from its position by manipulation without opening the bowel, and made to pass downward into the cæcum, or, if not in this direction, it may perhaps be made to retreat along the tube, so that a section may be made at a point of election, where the gut has not been subjected to such prolonged pressure as to bring it almost to the sphacelated condition of the loop of intestine in hernia. In the published report[2] of a case of laparotomy recently performed by Mr. Bryant for acute intestinal obstruction by a gall-stone (weighing 238 grains), it is not stated whether or not this precaution was taken, although in all probability it had been. The operation was performed after 72 hours of obstruction; the patient did not rally, but died in collapse eight hours later. Peritonitis was found at the autopsy. Mr. Bryant, in commenting upon the case, was inclined to attribute the fatal result to the delay in operating.

In contrast with the preceding, we find the report of a case (woman, 45 years), read by Dr. E. Brown, before the Burlington County Med. Soc.,[3] in which constipation and symptoms of obstruction existed for thirteen days, yet complete recovery followed the administration of pills containing ol. tiglii, gtt. $\frac{1}{3}$, pil. hydrarg., gr. ij, aloes, gr. $\frac{1}{2}$, given every two hours; two of these produced a large movement of the bowels, in which a calculus weighing 328 grains was expelled with great force, to the relief of the doctor as well as of the patient.

ARTICLE X.

ON LITHOLAPAXY.

By ROBERT F. WEIR, M.D., Surgeon to the New York and Roosevelt Hospitals, Lecturer on Genito-Urinary Diseases at the College of Physicians and Surgeons, New York.

THE operation of crushing a vesical calculus *in situ* and aspirating all the fragments in one sitting, as published by Bigelow in the pages of this

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[1] Principles and Practice of Surgery, 2d ed., Phila., 1878, p. 808.

[2] Proceedings Clin. Soc. of London. Am. Journ. Med. Sci., July, 1879, p. 267.

[3] The Country Practitioner, June, 1879, vol. i. p. 19.

Journal less than two years since,[1] has probably more than realized the expectations of its inventor, for since its promulgation to the profession this method of removing stone has been resorted to some seventy-seven[2] times, and the testimony thus accumulated has sustained the claims made for it. Bigelow, however, is somewhat in error in stating that the comparative harmlessness of long sittings was unsuspected until the publication of his paper, for not only had Amussat resorted to the immediate removal of stone from the bladder by the use of instruments so large as to compel the division of the meatus urinarius,[3] but also Leroy d'Etiolles accomplished the same thing in the very way that Thompson now does, *i. e.*, by the use of multiple lithotrites; and, more pertinent still, so did Heurteloup, who in 1846 published an account[4] of sixty-nine cases in which vesical calculi were removed in a single sitting, with but three deaths—two of which were due to coincident disease of the kidney, and one from cerebral apoplexy. The last named surgeon said of his operation, with justifiable complacency, "that whatever might be the fatigue (ether then not being known) which some of his patients had experienced, he had never found that it was regretted;" and also speaking later almost prophetically, "that the reduction in powder of vesical calculi being capable of being done in a short time, lithotrity will find in ether and chloroform,[5] and especially in chloroform, an aid so that but few cases will be beyond the reach of this operation:" and further, still quoting him, "that those who had been completely freed at once (from stone) have sometimes presented slight rigors or irritation, and even had the bladder attacked with catarrhal inflammation, but this lasted but a short time, for *it was not kept up by fragments since the latter had been entirely removed.*" This is the same reason that Bigelow gives in 1878.

It must be admitted, however, that Heurteloup, who did not use any evacuating tube, preferring to withdraw the detritus in the jaws of the lithotrite, subsequently[6] stated that "his aim was to construct and use the most powerful instrument in order to crush the stone, and not simply to complete lithotrity in one sitting." And his followers soon found that by

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[1] January, 1878.

[2]

Bigelow	21	Harrison	1
Van Buren and Keyes	19	J. C. Warren	1
Thompson	13	Coulson	1
Curtis	3		—
Cadge	5		65
Teevan	1	Included in this article	12
			—
			77

[3] Amussat in one case introduced an instrument, size 34 filière, *Gaz. des Hôp.*, 1856.

[4] Lithotripsie sans fragments au moyen des deux procédés de l'extraction immédiate ou de la pulvérisation immédiate des pierres vésicales, etc., 1846. This pamphlet has, I notice, also been quoted by Gouley in the *Medical Record*, Oct. 16, 1879.

[5] Gaz. Med. de Paris, 1848, p. 173.

[6] Gaz. des Hôp., 1856, p. 396.

the frequent withdrawal of instruments charged with detritus, complications ensued that caused the method of immediate extraction of a calculus by lithotrity to fall into disuse; and, though endeavours have from time to time been made to use evacuators, some of which are very similar to Bigelow's, as for instance Mercier's,[1] and one of which, Clover's, is generally known to the profession, yet happily Bigelow went further than Heurteloup, and, by the use of large-sized lithotrites and large-sized evacuators, legitimately deduced from the valuable republication by Otis of the natural calibre of the urethra, afforded surgeons of the present day not only the means, on the one hand, of attacking stones that have heretofore been considered unsuitable for lithotrity (viz., those beyond 1 inch in diameter), but also, on the other hand, of rapidly aspirating the fragments of a stone not of necessity in a pulverized condition. This latter, *i. e.*, the efficient means of evacuation of the fragments, is incontestably and essentially the novel point in Bigelow's operation.

Of the following cases, twelve in number, three occurred under my own care, and the others under that of the surgeons whose names are appended thereunto.

Case I.—L. C., aged 73; operation Dec. 20, 1878. Instrument used Bigelow's lithotrite, size 33 Fr.; greatest seizure 1 inch; lithotrite in bladder 19 minutes; straight evacuating tube, No. 31, for 12 minutes. Total time occupied in the operation 42 minutes. Detritus weighed 365 grs., and the composition of the calculus was uric acid. The day following the operation the temperature was 100°, and the frequency of urination had diminished one-half its previous rate. On the 8th day the patient was up and about, when he was seized with a chill and symptoms of renal colic affecting the left loin. The chill recurred a number of times during the week following, with great prostration, and the patient sank with symptoms pointing to abscess of kidney, Jan. 18, 1879, four weeks after the operation. The autopsy revealed the bladder perfectly sound and free from calculus. The left ureter, at about three inches from the pelvis of the kidney, was choked up by several small uric acid calculi. The kidney itself was broken down with several abscesses, one of which communicated with the perinephritic tissue.

Case II.—Dr. D. E., aged 65; hypertrophied prostate; operation March 8, 1879; Bigelow's lithotrite, size 33 Fr., used; straight evacuating tube 30 Fr.; greatest seizure $\frac{3}{4}$ inch. Time occupied 40 minutes, most of which was taken up with the aspiration, not only to get rid of the last fragment, but also to determine by the absence of any clicking noise that nothing was left in the bladder. Detritus weighed ʒiss, and was composed of the fusible phosphates. Very slight reaction. Recovery ensued, though obstinate cystitis remained, which resulted in

Case III.—in the same patient; operation repeated June 21, 1879, with Bigelow's lithotrite; time occupied 35 minutes. As before much time was spent in using the aspirator as a means of assuring one's self that nothing remained behind. Reaction was sharp, and the patient showed unpleasant symptoms of threatened kidney complication, such as heaviness, copious turbid urine, and fever. These subsided at end of fourth day, and the case then progressed favourably.

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[1] Traitement des Sédiments, etc., 1872, p. 373. Perfectionnements à la lithotritie, p. 13.

Case IV.—Dr. George A. Peters; operation, May 25, 1878. J. P., aged 64; Keyes's lithotrite used; greatest seizure ⅘ inch; lithotrite in bladder 50 minutes first time, introduced in all 3 times, occupying 76 minutes. Aspirator tube in bladder 19 minutes. Total time of operation 1 hour 45 minutes. Weight of stone 253 grs. Composition uric acid. Sharp vesical irritation followed for three days with but slight constitutional disturbance. Complete recovery.

Case V.—Dr. C. M. Allen; operation, Nov. 7, 1878. Jno. P., aged 51; Keyes's lithotrite used; time of operation 66 minutes. Lithotrite introduced 4 times, and remained in bladder 39 minutes. Straight evacuating tube, size 30 Fr., employed for 22 minutes. The stone weighed 398 grs., and its composition was of the mixed phosphates. The nucleus, which was a small piece of wax, was withdrawn imbedded in the eye of the evacuating tube. The patient made a rapid recovery, and was out of the house in seven days.

Case VI.—Dr. H. B. Sands; operation, Oct. 28, 1878; male, aged 69. A fenestrated lithotrite was used. The operation lasted seventy minutes. The aspirator was used twice; a curved evacuating tube, No. 28, was employed, a straight one having failed to enter. The greatest grasp was 1¼ inches. The weight of the collected fragments, some of which were lost, was 90 grains. The stone consisted of uric acid. No reaction from the operation occurred, and the patient made a speedy recovery.

Case VII.—Dr. H. B. Sands reports one case of rapid reformation of stone in an elderly gentleman, who had some time previously been lithotomized, and on May 20th, July 31st, Oct. 10th, and Nov. 1st, 1878, was relieved of calculi of phosphatic formation, by litholapaxy, the sittings being about half an hour each in duration, except the first, which lasted an hour. The quantity of stone removed was 360 grains in all. Collin's lithotrite was used. Since the last operation, the patient has acquired the use of the catheter, which had previously failed to be borne, and the reformation of calculus has thereby been prevented.

Case VIII.—Dr. McBurney; operation, Aug. 15, 1878. Alfred P., aged 32. Keyes's lithotrite. Duration of operation, two hours and twenty-three minutes, in which time the lithotrite was employed six times, and the aspirator six times, with curved evacuating-tube, No. 26 Fr. in size. The largest seizure was seven-eighths of an inch. The stone was phosphatic, and weighed ℥iij. Temperature next day was 101.6°, which declined to normal in four days. Patient had a very satisfactory recovery.

Case IX.—Dr. J. C. Hutchison; operation, May 22, 1879; patient aged 76. Bigelow's and Keyes's lithotrites used. The latter worked badly, pinching off pieces of mucous membrane three times. Bigelow's aspirating tubes. The operation lasted two hours. The stone was phosphatic, and the largest grasp was 1⅛ inches. No reaction followed, and the result was satisfactory.

Case X.—Dr. G. H. Fox; operation, Nov. 9, 1878. On a consumptive man, by means of Keyes's lithotrite and Bigelow's aspirator. Stone was 1½ inches in diameter. The operation, after continuing seventy-five minutes, and 154 grains of fragments having been extracted through a No. 29 tube, in three applications of the aspirator, was stopped, as the patient's breathing became unsatisfactory under the ether used. He passed a quiet night; no chill; and as no urine had passed by the morning, a soft catheter was introduced, and ℥iij of bloody urine withdrawn. The patient passed clotted blood with the urine during the day, and he suffered considerably from nausea and flatulence. Temp. 103¾° in the evening. Nov. 11, temp. 102½°; urinated without pain every half-hour; stomach still irritable. Nov. 12 and 13, was doing well; temp. 101°. Nov. 14, temp. 100¾°, pulse 98. During day became drowsy, and passed less urine than usual, and with more effort. In the afternoon had a severe pain in left renal region, followed by jactitation and slight coma. These symptoms of uræmia became more marked, and the patient died Nov. 15, 7.30 A. M.

The *autopsy* showed distinct pelvic peritonitis advancing upwards and into the abdomen. The bladder, which was hypertrophied, contained several ounces of muddy and very bad smelling urine, and showed evidence of intense cystitis. The mucous membrane of the bas fond, over a space as large as a ten-cent piece, was dark-coloured, and shreddy, and showed a loss of substance extending through the mucous and muscular coats, but not further. Whether this was due to an ulceration or a laceration, could not be determined; it was, however, thought to be the former, as the exposed fibres were coated with a decided layer of phosphates. In the median line, and just posterior to the orifices of the ureters, was found a fragment of a calculus about half the size of a bougie à boule, No. 30. It was imbedded in a mass of apparently necrotic mucous membrane. The kidneys were very soft and flabby, probably from decomposition, as the post-mortem changes generally had rapidly progressed. Microscopically, however, there were recognized shrunken glomeruli, with thickened Bowman's capsules.

Case XI.—Dr. G. H. Wynkoop; operation, Aug. 20, 1879; Jno. M. G., aged 55. Bigelow's lithotrite (33 Fr.) used. Duration of operation eighty minutes. Lithotrite used three times, and aspirator three times. Largest seizure was half an inch, and the amount extracted about ʒiss (estimated, as some was accidentally lost). The composition of the calculus was phosphatic. Reaction after the operation was good; urine passed freely. The day after the operation the patient presented evidences of peritonitis, and died in collapse, with slight convulsive action, at 9 o'clock that evening, some twenty-nine hours after the operation. Autopsy revealed the bladder free from calculous matter, save that in one of two small hernial pouches formed on the left side was found a small stone the size of a pea. On the posterior wall and to the left side, was seen a linear laceration about three-quarters of an inch in length, and involving the mucous membrane only. A little nearer the median line was an abrasion the size of a two-cent piece. On the floor were seen several minute lacerations, and spots of ecchymoses. The walls of the bladder, subperitoneal tissue, and the peritoneum, over the sites of the lacerations of the mucous membrane, showed evidences of inflammation; and in the peritoneal cavity were ℥vj sero-sanguineous fluid. The kidneys were both larger than natural, deeply congested, and so friable as to tear readily in the fingers.

Case XII.—Dr. G. H. Wynkoop; operation, Oct. 17, 1879; William W., æt. 34. Bigelow's lithotrite, Weiss's manufacture, used, size 33 Fr. The stone was a large one, the greatest grasp being 1¾ inches, and the time occupied in the operation was three and one-quarter hours. It was then deemed advisable to postpone further attempts to rid the patient of the remaining calculous material, both on account of his bearing the ether badly, shown by lividity and irregular breathing, and also by the difficulty met with in entering the bladder, by reason of a false passage formed by the end of the tube catching in an abrasion, which had resulted, in its turn, from the instrument becoming impacted. This impaction, however, on examination after withdrawal from the bladder, was ascertained to be due to a fault of construction in the screw, which was of a too soft steel, for on turning back the catch or lock the jaws readily separated or went " home," as was desired. The weight of the fragments extracted was 486 grains. Both Thompson's and Bigelow's aspirators were used, also straight and curved evacuators, sizes 26 to 30. The patient was in good condition the next day, and had at no time any unpleasant bladder symptoms. Polyuria to the amount of eighty ounces per diem was noticed for nearly three weeks after the operation. A fragment lodged in the urethra three inches from the meatus Oct. 31, and was, after trial of usual methods, removed by external incision. After that date an abscess appeared in the region of the scrotum, which, when opened, gave exit first to pus, and subsequently to urine. On Nov. 11, on account of a fresh impaction in urethra, well back, and of the continuance of the false passage, and of the abscess in perineo, the remainder of the calculus (65 grains, in one large (22 grains) and several small fragments) was removed by median lithotomy. The incision opened into the track of an abscess running up into the ischio-rectal tissues. The patient has since done well.

In nearly all the cases, not my own, I acted either as an assistant to the surgeon in charge, or was a witness to the operation. The following summary of experience is the result, offered, however, with some hesitation, as a larger observation may change the views set forth.

The remarks to be made apply first to the instruments, and second to the operation itself.

The Instruments.—The lithotrite of Bigelow, I must speak of in all praise, both for its ease of working, on account of its ball-handle, and mode of bringing the screw-power to bear, as well as for its general freedom from risk of pinching the mucous membrane, and from its facility of introduction. I have, however, learned that Dr. Bigelow believes that it can be and needs to be improved, in this latter respect. In its introduction care is to be observed that, after entering the hole in the triangular ligament, the outer end of the instrument should not be too rapidly depressed between the patient's thighs. A steady but gentle pressure downwards of the lithotrite, while at an angle of 45° with the horizon, relieves the roof of the prostatic urethra from the rubbing of the toe of the shoe, or jaws of the instrument. A tendency to impaction was noticed in two instances, but when the lithotrite was withdrawn it was ascertained to be due to the slot in the shoe or female blade not being in correspondence with the termination of the groove between the two shanks of the instrument. This defect has been remedied by enlarging the posterior part of the opening in the shoe. The size of those made by Weiss, after a pattern of Bigelow's, is to my mind too large, save for exceptional cases. They measure 33 of the

French scale, a size which in one case could not be passed through a normal urethra, and in another, by reason of the very slightest amount of impaction between the jaws, required considerable force to draw it through the spongy urethra. Of course, the lithotrite can be made of various sizes, as Bigelow plainly directs, and it is true that large instruments are better for crushing the largest stones. Certainly I should desire to use, in a calculus more than one inch in diameter, the largest instrument of Bigelow's pattern I could safely pass through the urethra; but I consider it always advisable that the lithotrite should be at least two or three sizes smaller than the urethra, say, for average working, one measuring 30 or 31 Fr. There is, also, a difficulty in inverting Bigelow's instrument behind an enlarged prostate, to seize a fragment there; but when a fragment is so small as not to be caught by the horizontal sweep of the jaws, it will either escape through the aspirator-tube, or be dislodged by it from its position.

Evacuating Tubes, varying in size from 26 to 31 of the French scale, were used in the cases narrated, and it was found to be a common experience that the straight tube could be more easily introduced than the curved ones, and when in the bladder less frequently became occluded by the sucking in of the mucous membrane.

In the use of Bigelow's aspirator, at times, much annoyance, and occasionally deception, was produced by the churning up of the air that leaked into the rubber bag and through the fittings. In this respect the aspirator of Thompson[1] proved itself superior, because the stopcock at its upper end allowed the evacuation of the air at will, and also permitted the ready introduction of a fresh supply of water to replace that which escaped in various ways, from time to time, during the operation. These improvements have, it is understood, been applied by Dr. Bigelow to the newest pattern of his aspirator, and with a stopcock on the catheter, and one adjacent to it on the aspirator, the wetting of the bed so commonly noticed is now done away with. In the use of Thompson's aspirator, it was learned that it was desirable to interpose a piece of rubber tubing between the evacuating tube and its metallic connection with the rubber bag, in order to obviate the unavoidable mobility imparted to the bladder end of the tube whenever the bulb was compressed. Nor was the observation of Keyes, that Thompson's aspirator had an advantage in taking up less room between the thighs of the patient, confirmed, as, in the customary position of lithotrity, ample space is provided for either aspirator.

The *operation* itself has been modified somewhat since it was first announced to the public, and principally in shortening the time of the employment of the lithotrite. After a satisfactory crushing of ten to fifteen minutes, it is now deemed wiser to use the aspirator, and thus remove the fragments, that would otherwise lodge between the jaws of the instrument, to be unnecessarily pulverized, and to interfere with the comminution of large pieces. And as soon as fragments cease to appear in the glass receiver, the crushing is then resumed, and so on. But in two ways departure from the directions of Bigelow have been made: first, in not following strictly his rule of injecting warm water into the previously emptied bladder "until the water is expelled through the loosely held urethra, by the side of the tube." Clinically, it was ascertained that at times this test either failed to work, or the water only escaped per urethram after some fourteen or sixteen ounces had been slowly injected. A serious distension is hence possible to a bladder accustomed for months previously to contain at the most only two or three ounces of urine. Five or six ounces of water are now thrown in, and the lithotrite resorted to, and, if any impediment is noticed from contact with vesical rugæ, an additional amount of fluid is then injected. The second deviation from the directions given is, in reality, based upon the old preference which is given to the French method of seizing or searching for a calculus over that of the English or Brodie's method. Bigelow states that "it can hardly be doubted that in practice, dexterous operators secure more stones and fragments as they gravitate into the female blade while it depresses the floor of the bladder, perhaps a little to one side or the other, where the stone is felt." While this may be true of some surgeons, yet a rigid adherence to this suggestion, on the part of an operator anxious to exactly carry out the details given, led, in Case XI., to the many minute lacerations of the floor of the bladder from the shoe of the lithotrite crowding downwards the sharp-edged fragments; producing thus the very accident which is justly stated by Bigelow[1] as likely to occur in the employment of Keyes's[2] instrument.

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[1] Since the above was penned, Thompson has modified his aspirator (*London Medical Record*, Nov. 15, 1879), mainly in having the glass receiver spherical. Bigelow has also made a similar change, and uses this receiver as a ball-and-socket joint, and thus much simplifies the stand of the apparatus.

Litholapaxy seems, in contrast to lithotomy, such an easy operation, simply to introduce a large instrument, crush the stone, and suck the pieces out, that there is a risk of every one trying it, but in reality this operation needs more skill than is required in lithotrity, and it follows as a sequence that the adherence to the rules that have hitherto successfully conducted lithotrity to its high place in surgery, should be maintained as far as possible in litholapaxy; for, although the bladder tolerates much handling, so long as all offending substances are finally removed, yet it must be constantly borne in mind that the dangers of mechanical violence to this viscus in litholapaxy, with an instrument no matter how perfect, is some ten or fifteen times greater than in an ordinary lithotrity; in other words, it is the difference between the damage possible in a five minutes' sitting and one of an hour's duration. Hence it is safer not to ignore or cast aside all the precautions suggested by a large experience in the past, and to perform this more recent operation, with the sole idea that all injuries of the bladder will be innocuous so long as the stone is removed. It must also be continually remembered how slight a lesion of the bladder or urethra may seriously influence a kidney whose condition cannot previously be determined. Litholapaxy strikes a spectator who witnesses it for the first time as a rude operation; most of this is only the association of ideas connected with the use of large instruments and the blood from an incised meatus; but there is some ground for this idea, when the blood-tinged water, even clots, are seen in the aspirator, when repeated *thuds*, indicative of the occlusion of the tube opening, are met with, and when evacuating tubes halt in their onward progress to the bladder from just created false passages or from want of due anatomical consideration. It is, therefore, not too much to say of this operation, that it demands all the care and gentleness that years have taught should be exercised in all operations on the urinary organs, and that the injunction should be loudly raised, that none but those who have had experience in lithotrity, or those who have familiarized themselves on the cadaver beforehand with all the required instrumental manipulations, should undertake the operation of litholapaxy. This note of warning has already been raised. Bigelow says that it should not be done by a novice; and Cadge, of the Norfolk and Norwich Hospital, writes:[1] "I think the new plan (of operating) should not be attempted by any one who has not already acquired by plentiful experience on the living, and by repeated experiments on the dead body, all the little knacks and tricks which go to make up successful lithotomy." Gouley[2] has more recently put forth a similar caution.

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[1] In opposition to Keyes's lithotrite he says, in the *Medical Record*, June 8, 1878: "1. Sharp fragments while firmly engaged in the opening or driven through it are likely to injure the floor of the bladder. During a long operation, such as I propose, it is hardly possible to prevent the frequent contact of the floor of the bladder with the extremity of the instrument, in which case the latter does not present a rounded and polished surface, but irritates it with protruding splinters of calculus continually coming in contact with the same limited region of the floor."

[2] Keyes's lithotrite purports to be a modification of Reliquet's, but it is really after the pattern of one of Weiss's early instruments. Weiss was the first to penetrate completely (according to Mercier) the female blade, and did it in such a manner that the male blade could even pass beyond the other so that they should not become packed. Information relative to Mercier's lithotrite is moreover desirable, as its claims for non-impaction and avoidance of pinching the mucous membrane are indorsed by Reliquet, p. 502.

Notwithstanding all the existing possibilities of kidney complications in a stone case, it is exceedingly satisfactory to see that in the seventy-seven collected cases, there were recorded but four deaths, only one of which could be said to be due to a nephritic cause, the others being produced by injuries done to the bladder from the operation itself, and which are such as experience will lead to the avoidance of. The mortality of these cases is only 5.2 per cent., or 1 death in 19 cases, a lower rate than that given to lithotrity, which is 1 death in 13 cases (Thompson). This result, considering the novelty of the operation and the fact that a number of lithotomy cases, or those which would have been so, is included in the list, is extraordinary; but properly to pass judgment on any new operation requires larger figures than these.[1] Several years will probably elapse before the profession can rightly estimate the merits of litholapaxy. Furthermore, it is improper at any time to compare litholapaxy with lithotrity, for it is an operation which not only embraces the latter, but invades to a large extent the domains of lithotomy. How far this invasion may progress time must tell, but the limits of a crushing operation have apparently been justifiably advanced from the diameter of 1 inch, allotted to the older operation of lithotrity, to 2¼ inches, as has been done successfully by Bigelow.

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[1] Lancet, April 5, 1879.

[2] Medical Record, Oct. 18, 1879.

New York, Nov. 18, 1879.

Article XI.

A Case of Inverted Womb, with supposed Malignant Disease of its Fundus; its Easy Reposition and Removal of Old Placental(?) Tissue; Perfect Recovery of the Patient. By Walter F. Atlee, M.D., of Philadelphia.

I was called to visit, in September, 1879, Mrs. E——, residing in this city, in Eleventh Street below Fitzwater. I found a woman of medium size, very anæmic and extremely thin. She was twenty-nine years of age, had been married eleven years, and had had three living children. Three years before I saw her she had a miscarriage, at six and a half months, brought on by heavy lifting. At the time of this miscarriage there was a flow of blood for one week, once every day. She stayed in her bed for this week, and at the expiration of that time the fœtus was expelled; it lived about two hours. After the child was out the discharge of blood was very slight. The patient knew nothing of the after-birth. Since this miscarriage the patient had never been well; being subject to irregular discharges of blood, amounting often to profuse hemorrhages.

On passing the finger into the vagina, at a distance of about one and a half inches, an irregular body was encountered feeling like a fungoid growth; pushing further on between it and the vaginal walls, a ring of smooth tissue was met with about one-third of an inch in breadth, and beyond it was the mouth of the womb. The uterine probe entered about a half-inch when passed between the mouth and this ring of smooth tissue. When the finger was introduced into the rectum no fundus uteri was felt; it came in contact with fingers pressed over the pubes as if only a few sheets of paper intervened. There was a good deal of thin, bloody, bad-smelling discharge coming from the vagina, that was increased by the examination. The case was diagnosed as one of inverted womb, with cancerous disease of the fundus.

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[1] Dr. Keyes has just informed me of a death occurring in his practice after litholapaxy, wherein the result was due to an abscess in each kidney. The case was a bad one, the preceding cystitis very severe, and pyelitis and contracted kidney were recognized prior to the operation. Six drachms of calculous matter were removed. At the autopsy the bladder was found perfectly smooth, uninflamed, and empty of stone.

On Saturday, September 27, the discharge from the vagina was so profuse that the patient lost consciousness, and was supposed to be dying. It was arrested by a sponge, soaked with Richardson's styptic, passed into the vagina. The pain caused by this application was very severe.

The removal of this inverted womb seemed to be urgently demanded, and I determined to perform the operation, choosing for the purpose an écraseur with very strong piano wire.

On the following Tuesday, assisted by Drs. Agnew, Penrose, Hunt, Harris, Hickman, Baker, and Boardman Reed, I made ready to perform this serious operation. In order not to arouse hemorrhage the condition of things in the vagina was not investigated this morning by any one. By his finger in the rectum, Dr. Agnew made sure that the fundus of the womb could not be felt; that inversion still existed.

The patient, having been rendered insensible by inhaling a mixture of chloroform and ether, was placed in the knee-chest position, and a Sims's speculum was introduced into the vagina very carefully, lest the diseased mass it contained might be bruised. To my amazement when the speculum was pulled up there was nothing whatever unusual to be discovered in the canal. At the bottom was seen the os tincæ quite open; the finger pushed into it felt plainly a fleshy mass, that was easily removed by Penrose's forceps. This mass was of irregular size, about one-half inch in thickness, and one inch and a half in breadth. Several small pieces that adhered to the left back part of the fundus of the womb were removed by blades of the forceps, used as a curette. The womb could now be felt plainly by the finger in the rectum, and by pressing over the pubes, to be in its normal position. The fundus was evidently thin and soft. There was no hemorrhage during the operation, nor afterwards, and the patient made a rapid and perfect recovery. The mass removed appeared to most of those who saw and examined it to be the remains of an old, adherent placenta. Under the microscope I could make sure only that there was nothing whatever malignant about it; its anatomical elements were those of normal cellular tissue.

Some ten years ago I used for several weeks every means I could think of, and all without avail, in trying to reduce an inverted womb of only a few months' standing. The woman died some months afterwards from exhaustion as a consequence of her condition, while I was making up my mind as to the propriety of amputating the uterus as the last and only means of saving life.

My father, Dr. John L. Atlee, of Lancaster, told me that many years ago, before the use of anæsthetics, he was called to visit the wife of a farmer, in consultation with her physician, in order to effect the reduction of an inverted womb. All their efforts were unavailing, when, eleven months afterwards, to his astonishment, he learned of the happy delivery of the patient of a healthy child. The stout husband, using his own exclusive rights, had succeeded where physicians and surgical appliances had failed. We may well exclaim with Celsus: "*Sed vulvi natura mirabilis —cum in multis aliis—tum in hac re quoque facile cognoscitur.*"

Remarks.—By Robert P. Harris, M.D., of Philadelphia.

Having been present at the operation reported by Dr. Atlee, which fortunately for the woman was made to take the place of one of a much more dangerous character, I have no question as to the fact, that spontaneous reposition of the inverted uterus took place while the patient was being prepared for the operation in contemplation. Exactly when the replacement occurred, it is of course impossible to determine, but I have no doubt that it took place as soon as air was admitted into the vagina in the knee-chest posture, whether naturally or by the hand of the operator, but probably the former, and immediately after her hips were elevated.

Although a very rare and fortunate curative process, spontaneous reposition is not so rare but that it has occurred several times in this city. The unique character of Dr. Atlee's case lies in the manner of reposition, and the peculiar circumstances under which it took place. We all know the effect of opening the vagina in the position in which the patient was placed; how the abdominal viscera act as the piston of an air-pump in producing a partial vacuum, and the effect of this in elongating and distending the vagina. Where the patient is rendered passive by anæsthesia, and the abdominal muscles are relaxed, we can readily understand the action of suddenly elevating the breech, so as to throw the abdominal viscera toward the diaphragm, in producing a decided suction upon and replacing a thin, soft, and pliable inverted uterus, such as existed in this anæmic patient.

That repeated hemorrhages have the effect of softening the tissues of the uterus, we know, upon the authority of Boivin and Dugès, who say: "We have ourselves observed in cases of death from repeated hemorrhages, that the uterus was soft, enlarged, and easily inverted, although there had only been some small polypi within it." As falls have, in two of the cases I am about to quote, effected a reposition, traction must also have an influence in effecting the change. Although I have reasons for doubting the correctness of many old medical reports, those I have selected bear the impress of a reliable diagnosis and faithful representation. It would not be difficult to multiply cases, but it will be sufficient to name a few that are striking and typical.

Case I.—A woman of 18, at Châlons-sur-Sâone, of a rather delicate constitution, was delivered Nov. 1, 1787, under the care of M. Robert. The uterus contracted well, then relaxed, accompanied by hemorrhage, then again contracted, and the fundus could be distinctly felt above the pubes. On the sixth or seventh day the nurse discovered a rounded mass within the vulva, which proved to be an inverted uterus. On the twenty-second day she was examined by Dr. Le Roux, a surgeon of Dijon, who thought it a polypus, but changed his opinion a week later, when it had protruded three or four inches from the vulva, but thought reduction impossible. What subsequently transpired does not appear, except that M. Robert, in a letter to M. Louis, of Paris, dated Jan. 4th, 1788, two months after the accident, states that complete reposition had taken place, there being nothing distinguishable by the touch within the vagina. The case was reported before the Académie de Chirurgie, of Paris.[1]

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[1] Dailliez. Essai sur le renversement de la matrice, Paris, 1805, p. 33.

Case II.—The wife of M. de la Barre, a surgeon of Beuzeville, France, suffered an inversion of her uterus under the care of a midwife. M. de la Barre detached the placenta, but did not try to replace the organ. When too late to do this, he called a number of physicians to his aid, but to no purpose. At the end of eight months, on getting out of bed to take an enema, she slipped and fell, and, as a result, reposition was found to have taken place. At the instant of falling, she felt an extraordinary movement in the lower abdomen, accompanied by a severe pain, and this was followed by hemorrhage and syncope. The cervix was found free, and the surgeon could introduce his finger deeply into the uterus. This case was also reported to the Paris Academy of Surgery.[1]

Case III.—The case of Madame Boucharlatte is still more remarkable. She gave birth to her first child in 1782, after a natural labour, but her uterus became inverted during the delivery of the placenta, and she fainted from loss of blood. The accoucheur, fearing her death, did not attempt to replace the organ, and it remained in its abnormal state for eight years, during which period she consulted various physicians of Paris and Bordeaux. In Dec. 1790, she consulted Baudelocque, who found the uterine projection of the size of a medium hen's egg. He tried to reduce the uterus by the bi-manual method, and could force it in about one-half, but it was too painful a process for her to endure, and he desisted, when the fundus returned as before. Three days later, in walking in her room sustained by friends, she fell, and the uterus, as in Case II., became replaced. She likewise experienced a peculiar ventral movement, accompanied by an acute pain, and fainted for a moment. Dr. Baudelocque was summoned, and found the parts as in Case II. For the first time in eight years, the patient was free from the loss of a drop of blood, a condition that seldom existed during the inversion for more than a few hours together. Being a widow of only 28, and recovering her healthful condition perfectly, the patient married a second time, and gave birth to a child at full term.[2]

Case IV.—Drs. Mœhring and Warrington, and Profs. Hodge and Meigs, of Philadelphia, all decided some years ago, that a case under the care of the first named accoucheur, was one of inversion of the uterus, Dr. Mœhring having himself detected the condition, which had then existed for two years. Efforts at reposition were made, but it being in the days before the introduction of anæsthetics, nothing was accomplished. About four years after this occasion, and six from the inversion, the woman came under the care of Dr. Warrington, and was delivered of a fœtus at three months. The four well-known accoucheurs were perfectly confident that their diagnosis of inversion was correct; which being the case, spontaneous reposition must have taken place.[3]

Case V.—Mrs. S——, of Phila., æt. 27, mother of two children, the younger five weeks old, was delivered without assistance in 1841, and was found by Dr. Levis, who was called to attend her, to have inverted her uterus. Dr. Charles D. Meigs, who visited the patient with Dr. L., confirmed his diagnosis of her condition. She had had a violent flooding at the time of the accident, and was afterward subject to hemorrhages, which gradually declined. After her return from a journey to the Western States, she became pregnant, and gave birth to a living child.[4]

Case VI.—In a letter of Dr. Johnson C. Hatch, of Kent County, Connecticut, to the late Prof. Meigs, we have the following record: Mrs. H., 24, primipara, was delivered after an easy and natural labour, on Aug. 22d, 1845, and the placenta was expelled without assistance in twenty minutes. At the end of fourteen or fifteen hours, she was seized with severe pains lasting two or three hours, and Dr. Beardsley, being called, found her uterus inverted, and about a third larger than a goose-egg. Drs. Hatch and Beardsley tried to replace it, and could carry in the fundus about two inches, when the resistance became unconquerable and pain severe. Prof. Beers, of Yale College, New Haven, arrived on the fifth day, and had no doubt of the inversion. Another attempt was made at reposition, with an instrument made like the upper part of a round-headed cane, and pressure was kept up for four or five hours. The fundus and body were pressed into the cervix, but were found as before after the woman had rested for several hours. Dr. St. John, of Medford, also examined the patient, and confirmed the opinion of Drs. Hatch and Beardsley. The woman gradually improved in health, but experienced a sense of weight in the pelvic region. In Feb. 1847, she had a profuse menstrual flow, the first of this character since the accident. In March she had a second, and even more abundant, but after this there was no repetition. In Dec. 1847, Dr. Hatch was sent for, as Mrs. H. believed herself pregnant, which proved to be the case, and she was delivered on May 23d, 1848, of a male fœtus, weighing 9 lbs. 6 oz. The placenta came away in twelve hours, and there was no further trouble.[1]

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[1] Op. cit. p. 105.

[2] Op. cit. p. 107.

[3] Meigs' Obstetrics, 1852, p. 606.

[4] Ibid. p. 607.

CASE VII.—Woman, aged 40; twelfth labour. Inversion occurred while the midwife was pulling upon the cord. She attempted to replace the uterus, but failed. At the end of six weeks she had a copious hemorrhage; in eight and a half weeks went into a hospital for treatment, where it was found that her whole uterus was inverted except about three-fifths of an inch. As she had a severe diarrhœa, no attempt at reposition was made, and she was not again examined for two weeks, when it was found that the organ had become replaced. Dr. Spiegelberg attributed the reposition to traction by the round and broad ligaments during the repeated defecations, aided by her continual lying in bed.[2]

CASE VIII.—Reported by Dr. H. Hunt, of Belloit, Wisconsin, 1873. Woman, 23; tall, thin, and of feeble constitution; primipara, delivered under care of Dr. Merriman, August 3d, 1869, after a natural labour. The placenta was adherent; cord, small and weak; child weighed six pounds. Five days after delivery, Dr. M., in using a catheter, found the uterus inverted. On the seventh day an attempt at replacement was made by Dr. Taggart, assisted by Drs. Strong, Merriman, and Hunt, but to no purpose. Ten days later, Dr. Hunt found the uterus unchanged; but on repeating his examination on October 1, eight weeks after the accident, he found the uterus completely restored. The woman noticed that a change was taking place two weeks before this, and that the tumour was receding and becoming smaller. This change continued until she could no longer reach the tumour.[3]

We have now presented for consideration the records of eight cases of spontaneous reposition of the inverted uterus, in which the abnormal condition had continued from a few weeks to eight years. It is evident from these statements, that replacement of the organ under an anæsthetic, by mechanical pressure, may at times be a very simple process. Had Baudelocque, in 1790, been in possession of one of our anæsthetics, he would no doubt have succeeded in replacing an inverted uterus of eight years standing, and, in all probability, in a few minutes, as all that he required, in the attempt in which he half succeeded, was abdominal quiescence and insensibility to pain. This is evident from the fact that a fall accomplished suddenly, what he had failed to do by slow pressure only three days before; thus proving, also, that the uterine tissues were in a condition favourable for the operation.

Prof. James P. White, of Buffalo, has succeeded in the reposition of a uterus that had been inverted for twenty-two years; other operators have done the same after nearly as long an interval, and others noted for their skill have failed after much shorter periods. The condition of the uterus must then have much to do with the final success or failure.

It is evident, also, that there are favourable and impossible periods for the effort of reposition. The favourable times would appear to be: 1st, immediately after the accident, and before the cervix has become contracted; 2d, at the end of seven or eight weeks, when involution has altered the density of the organ; and 3d, when a succession of hemorrhages shall have rendered the patient thin, pale, and anæmic, and her tissues soft and yielding. If falls, posture of the body under ether, frequent defecation in diarrhœa, and perhaps the marital relation, are capable of replacing the uterus when softened in tissue, then mechanical pressure should be tried, with a reasonable hope of success, under a similar condition. The density of the uterus may be readily tested, and it can then be decided what plan it is best to pursue. Where the uterus remains dense, there is no plan equal to a continuous, moderate, elastic pressure upon the fundus.

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[1] Ibid., Phila., p. 608.

[2] Archiv für Gynäkologie, vol. v. part i. 1873.

[3] The American Journal of the Medical Sciences, Oct. 1873, p. 574.

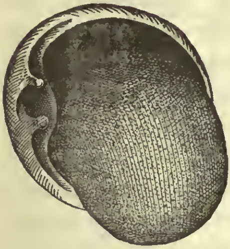
ARTICLE XII.

A CASE OF REPRODUCTION OF THE MEMBRANA TYMPANI. By S. O. RICHEY, M.D., of Washington, D. C.

JANUARY 23, 1879, I examined the ears of Doctor S——, aged 37 years, and with his permission I report his case from my notes:—

Thirty-five years ago he had scarlatina, and as a complication, acute inflammation of the left middle ear. Chronic suppuration of the left tympanum followed and has continued to this time.

Fig. 1.



Upon inspection the left external meatus is found to be red and inflamed from the presence of irritative pus: the middle ear is the seat of profuse granulation, and contains a polypus large enough to two-thirds fill it, extending into the meatus externus one-third of the length of the canal (see Fig. 1). The membrane of the drum is entirely gone with the exception of a sickle-shaped segment 0.5 mm. wide, and about 2 mm. in length in the periphery of the posterior inferior quadrant.

The head of the incus and the short process of the malleus may be seen adherent to the upper wall of the tympanum. The connection between the incus and stapes is broken, and the manubrium mallei has been lost by ulceration. The Eustachian tube is free. $\text{H. D. S. A.} = \frac{17\text{ cm.}}{\text{watch} = 3.5\text{ m.}}$

The right Eustachian tube is so closed that no air can be forced through it; the right membrana tympani is thickened, opaque, dry, and adherent to the inner tympanic wall in the neighbourhood of the promontory.

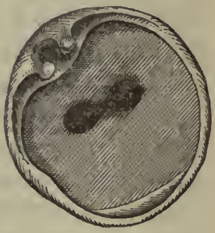
In the post-superior quadrant of this membrane is a bulging resembling a tumour: the external meatus is dry and desquamating.

$$\text{H. D. D. A.} = \frac{5\text{ cm.}}{\text{watch} = 3.5\text{ m.}}$$

Feb. 28. The right ear has been treated by iodized air forced through the catheter, and the hearing has increased to $\frac{32\text{ cm.}}{\text{watch} = 3.5\text{ m.}}$. The same gain is not noted as tested by the voice. (This is the greatest degree of improvement I have been able to obtain in the right ear.)

After removal of the polypus, the left middle ear was cleansed and treated with a solution of nitrate of silver, ʒj to fʒj of water. The middle ear has been washed out each day with an alkaline solution forced through the Eustachian tube and the middle ear, and the nitrate of silver solution applied. No improvement in the hearing power of this ear has been made, but the granulations being all destroyed, restoration of three-fourths of the membrane has been obtained. An hour-glass perforation, representing one-fourth of membrana tympani, remains, situated just anterior to a vertical line dividing the membrane in halves. The perforation slants in its long diameter from below upwards and from before backwards at an angle of 65° (see Fig. 2).

Fig. 2.



March 1. The middle of the hour-glass perforation has closed, leaving two pin-head holes, one at each end of the former perforation, distant from each other about one-third of the vertical diameter of the membrane.

8*th.* Air can still be forced through the membrane, but the point of escape can not be seen. Since March 1st this ear has not been treated with nitrate of silver, but iodized air and warm water have been constantly forced into it through the Eustachian tube.

20*th.* The membrane is entirely closed, and no pressure of air or water to which the middle ear can safely be subjected will force a passage through it. The patient can inflate the tympanum, perceptibly forcing outwards the new membrane. H. D. S. A. $= \frac{.5\text{m. (21 inches)}}{\text{watch} = 3.5\text{ m.}}$.

June 17. The left meatus externus begins to give some evidence of the presence of cerumen.

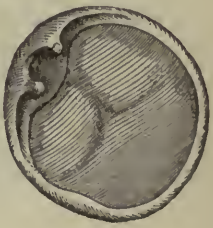
Sept. 15. No change in the appearance of membrane—

$$\text{H. D. S. A.} = \frac{.85\text{ m.}}{\text{watch} = 3.5\text{ m.}}.$$

The new membrane is peculiar in appearance, giving reflexes from several points of its surface, and is very flexible. (See Fig. 3.)

In my former cases, except one, the new membrane became adherent to the promontory, or to some other point interior to the attachment of the original membrane. To avoid this, frequent and persistent inflation has been resorted to, resulting in an irregular bulging of the membrane, which, posteriorly, is attached normally, while anteriorly it is situated within the position of the old membrane. Nearly in the position and in the direction of the former hour-glass perforation is an irregular depressed line, which looks like a line of adhesion, but upon inflation it moves outwards with the membrane.

Fig. 3.



If the middle ear be inflated, this new membrane becomes as hyperæmic as a healthy membrana tympani under like circumstances. The distribution of the bloodvessels does not seem to be so regular as in the normal membrane, though the general direction of the vessels is towards the centre.

As stated above, the hearing distance of the left ear reached 34 inches, tested by a watch which may be heard at least twelve feet distant, and which, at our first interview, was heard by this ear seven inches away.

The suppuration has lasted since childhood, and the *right* ear being good until later in life, the patient depended upon it for practical purposes, and ignored the sounds received by the left ear; just as in strabismus, images are neglected by one eye until from want of exercise it becomes amblyopic. The patient now with the left ear easily recognizes single, distinct tones, such as the tick of a watch, but mixed sounds are not so well analyzed by it, as by the right ear, although its power of audition is three times as great. Thus he depends upon the right, or educated ear in auscultation, while the left is useless to him for this purpose.

Such is the history of a case, which is the sixth in which I have obtained similar results. In the other five, the *whole* membrane was destroyed. The two first were not reported at all, as I kept no notes of them. The third case (to which I called the attention of the Chicago Medical Society, and a report of which was published in the *Chicago Medical Journal and Examiner*, April, 1878) was one from which I removed a necrosed cochlea, and a sequestrum from the mastoid cells. The history of two others in which both membranæ tympani were reproduced was read before the Illinois State Medical Society, May 1878, and published in the "Transactions" for that year.

In only one case since my first success have I failed to obtain the result desired: this patient had before been treated with nitrate of silver, but the treatment had not been carried far enough, and was attended by subsequent loss of the renewed tissue. Thus, of seven cases of destroyed membrana tympani, in six it has been restored with decided improvement of hearing.

The treatment in each has been the same, and would seem to demand for the subject further consideration. In none of these had the suppuration lasted less than 2 years: in two it had existed for 20 years, and in the last for 35 years. The advantage of the new membrane, even though the hearing be not improved, need not be dwelt upon.

In treating these cases, it must be remembered that the middle ear is the seat of the disease which caused the destruction of the membrane, and is the part to be treated. It has been suggested by some writers[1] on the subject of perforation of the membrana tympani that the *edges* of the perforation be treated with nitrate of silver, but my experience does not justify this course. Any such application to the edges of the membranal tissue seems to retard rather than advance its formation.

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[1] Wilde (Dis. of Ear, p. 294), and others.

The surgeon should force the pus from the middle ear into the external meatus, using the catheter, if possible, every day. He can by this means keep open the Eustachian-tube, by forcing out the pus prevent its reaching the stomach, and, at the same time, avoid the dizziness and vertigo which are often caused by thorough syringing.

The patient should, in the mean time, be advised to syringe the ear with warm water frequently enough to insure cleanliness, and to make use of some astringent lotion. For the purpose of stimulating the middle ear, and destroying any granulations which may be present, nitrate of silver, in saturated solution, applied, by means of a cotton-holder, to the lining mucous membrane, has been attended with best results in my hands. Wilde preferred nitrate of silver, and some writers since his time have expressed the same preference. Weak solutions seem to accomplish little, though they cause tolerance if used for a time, and subsequently the stronger solutions do not appear to answer so well as if used from the beginning.

The first application of nitrate of silver (ʒj to fʒj) solution usually causes severe pain for several hours, and the excitement must be prevented from getting beyond control. Its subsequent use rarely gives much annoyance to the patient, as it seems to change the nature of the surface to which it is applied. It may be necessary in some instances to use solutions of less strength than that named.

In my former cases the reparation of tissue began in the upper and anterior segment, and extended downwards and backwards, the last of unrenewed tissue being in the posterior inferior quadrant. In the case of Dr. S. the new membrane seemed to grow nearly equally fast from all sides: perhaps, a little more rapidly from the direction of the shred of membrane left by the destructive suppuration.

Early in the process of repair the membrane grows rapidly, when it once begins, but when the opening becomes small progress is tedious, for whatever stimulates the middle ear is apt to increase the suppuration, and this, in turn, keeps open the small apertures in the membrane. In any event, the treatment must restore the middle ear cavity to comparative health, or the result will hardly be satisfactory.

Nearly all writers on the subject agree in regard to the great power of reproduction in the membrane. Hinton[1] says, that "there seems to be no destruction of the membrane so extensive as entirely to put aside possibility of repair;" but he expresses the opinion that "perforations of the membrane occurring with discharge from the tympanum may be of any extent, except that they are *never absolutely complete*." I have seen instances in which not a shred of membrane was left: its ligamentous attachment to the meatus, alone, remaining to indicate that a membrane had been there. Other observers have seen this same condition. Mr. Hinton uses the word *repair* instead of reproduction, and reports one case of *repair* of *half* the membrane after three years' treatment; and another, in which *nearly* the whole membrane was restored after its destruction: it, however, remained perforate.

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[1] Aural Surgery, pp. 173–178.

Troeltsch,[1] in this connection, states that "the perforation is generally the reason that a chronic otitis with otorrhœa often remains permanent—a radical cure not being possible." The perforation can be blamed for this, only because it exposes the middle ear to the cold air; for if the middle ear cavity be restored to a healthy condition, the suppuration will cease, and the perforation will generally close.

Roosa[2] obtained a new membrane after ten months' treatment. The inflammation was acute when the case came under his care, and the patient was less than 12 years of age. He claims that there was *entire* destruction of the membrane in this instance. A case is reported by Spencer,[3] of St. Louis, but the details are very meagre. He claims entire loss, with subsequent reproduction of the membrane ten years later. Moos[4] reported two cases in which the membrane was destroyed *even up to* its periphery, and in both was closed by cicatricial tissue. In the cases reported by the writer of this paper the new tissue does not seem to be cicatricial, but resembles a true membranal formation.

In the case of Dr. S. the membrane may have been restored by proliferation as there was a minute shred left, but in the one from which I removed the cochlea, nothing remained of the ossicles, or the old membrane, and yet the new membrane resembled the normal membrana tympani.

I desire to express my obligations to Dr. J. H. Thompson for the drawings from which the cuts accompanying this paper were made.

ARTICLE XIII.

A CASE OF CROUPOUS BRONCHITIS; RECOVERY UNDER TREATMENT. By THOMAS H. STREETS, M.D., P. A. Surgeon, U. S. N. Hospital, Yokohama, Japan.

THE following report of a case of this rare disease may not be without interest on account of the fulness of the clinical history, the presence of certain anomalous symptoms, and the marked results of treatment.

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[1] On the Ear, p. 184.

[2] Treatise on Dis. of the Ear, p. 359, 4th ed.

[3] Transactions of American Otological Society, 1871.

Klinik der Ohrenkrankheiten, p. 133.

The patient is a native of Ireland, a sailor, aged 39 years, 5 feet 9 inches in height, and weighed, previous to his recent illness, 167 pounds. He had always enjoyed excellent health; or, to use his own expression, "had never been on the sick list a day in his life." No hereditary tendency or syphilitic infection could be traced in the case. He bore the rating on board the ship of "Captain-of-the-Hold," and his occupation kept him out of the sun-light, and in the darkness and dampness of the bottom of the ship. I may say here, that I have seen the strongest and most robust constitutions break down when continuously employed as Captain-of-the-Hold. The rating is probably changed oftener than any other on board a man-of-war, in consequence of the bad health of those filling it.

In the spring of 1878, while the ship was lying in the harbor of Yokohama, he had an attack of ordinary bronchial catarrh. He received medical treatment, and apparently recovered during a cruise to the southward, in the tropics. No bronchial tube casts were raised during this attack, the expectoration being altogether mucous or muco-purulent. In June of the same year, after the ship had returned to Japan, he had a recurrence of his bronchial trouble, and it was then that the croupous character of the disease first manifested itself. Very shortly after the first appearance of the cough he began to expectorate tube casts, and according to the patient's statement, as many as six or seven were brought up daily, some of them being of the size of a goose-quill. On the 18th of June he had a copious hemorrhage from the lungs, following a severe and straining effort of coughing. Temperature ranged from 99° to 101°. This is the record that accompanied the patient from the ship, supplemented by his own statements. He had a second attack of hæmoptysis on the day of leaving the ship for the hospital. Was admitted into the latter institution on the 5th of July, 1878.

The right side was only invaded by the disease, which was circumscribed —being confined to the middle and lower parts of the right lung in front. Percussion sounds normal; the vesicular murmur masked over the affected area, and moist râles audible. Temperature in the morning normal, elevated one or two degrees in the evening; night sweats, and much general debility. Digestion good and appetite fair. July 9th. Coughed up two bronchial tube casts, and his sputa were slightly streaked with blood. 10th. Brought up a large bronchial cast in the morning; afterwards the cough was less troublesome. 11th. After a severe paroxysm of coughing this morning, brought up a large tube cast. Has considerable pain and tenderness about right nipple. 12th. At 9 P. M. the thermometer registered 100° in the axilla. During the night had a sharp attack of coughing and raised two tube casts. Always felt easy and comfortable after expelling the casts. 13th. During the night brought up one tube cast. 14th. Coughed up several bronchial casts during the night, and felt so much easier in the morning that he imagined his health was improving. Not much cough during the day. Morning temperatures continue normal. 15th. Had more ease from cough than on any day since admission. 16th. In the afternoon and at night had attacks of epistaxis. Expectorated two casts from the small bronchi during the afternoon. Dyspnœa has not been a very marked symptom in this case. The casts present all the characteristics of the bronchi of the lower portion of the lung—gradually tapering into the smaller branches and long between the bifurcations. When not stained with blood their colour is a diluted milky-white. 17th. Felt very badly during the day, and coughed up several casts during the night. Has been taking cod-liver oil and whiskey and an expectorant mixture of fluid extract of prunus Virginiana and senega. The night-sweats are controlled by belladonna. At this date commenced inhalations by a steam atomizer of a solution of ammonium chloride and carbolic acid. 18th. Rested badly, although he had but little cough. Brought up a cast from the small bronchi. On the 20th the patient continued to cough up casts which are principally from the small bronchi. 21st. Had but little sleep during the night, and considerable cough. Expectorated a small cast. Is feeling very weak, and has considerable pain below right nipple and under right shoulder blade. Tr. iodine locally gave relief to the pains.

There was no change in any of the symptoms until 27th—had a spell of coughing every night, which was usually relieved by the expectoration of one or more bronchial casts, and only now and then raising any during the day. On the 27th another symptom was superadded, which became very prominent as the disease progressed, causing a great deal of suffering. He began to complain of considerable pain in the right knee-joint. There were heat, redness, and swelling about the joint, which pulsated under the hand. The knee finally became so bad that the patient could no longer move about, and was confined to his bed. Opiate lotions were applied. During the two days following the 27th coughed much less, and raised no bronchial casts. On the 30th was able to walk about again; had a paroxysm of coughing, during which he brought up a cast from the small bronchi. The pain in the knee continued with varying intensity, sometimes the greater pain being in the knee-cap, sometimes in the popliteal space, and sometimes it radiated up and down the leg in the direction of the veins. This pain for a time became the most prominent symptom. Bronchial casts continued to appear, but with diminished frequency, sometimes three or four days elapsing without any. A mixture of tr. colchicum and potassium acetate was given, and also salicylic acid, under the impression that the pain was of a rheumatic character; but no benefit accrued from either. Emp. belladonnæ, with the knee wrapped in cotton-batting, gave relief. On August 6th the temperature rose to 102°, which was the highest reached in the disease. The temperature on this and the preceding morning was 99° in the axilla. Had an attack of epistaxis in the afternoon, which lasted about five minutes. Coughed up a larger tube cast than usual.

After the 25th, the patient ceased to expectorate casts, except at long intervals, but the cough continued with diminished expectoration. No change otherwise, except growing weaker and more debilitated, and losing weight steadily. Sept. 3d. Had a slight attack of epistaxis, followed in the night by a severe attack, which could only be checked by plugging the nostrils. On the following day there was bleeding from the gums, and in the night another spell of nose-bleeding. On Sept. 14th the patient's cough had entirely ceased. From the commencement of the disease he had steadily lost weight until he was reduced to 116 pounds. A tonic and stimulating course of treatment was instituted and persevered in for a long time, but without any good results. Appetite and digestion continued good. From Sept. 18th the nose and gums began to bleed almost continuously; was obliged to keep the nostrils plugged most of the time. Astringent mouth-washes, turpentine, sulphuric acid, and other hæmostatics were used without benefit. The blood had evidently lost its property of coagulability. The skin was sallow and dirty-looking in places. The tip of the nose was swollen and purplish, and there were one or more large purplish blotches on the cheeks. Stools very dark. The patient was confined to the bed most of the time by the inflamed state of the knee-joint. There was slight œdema of the right leg, which was probably caused by the interference with the circulation about the knee, as it was not present elsewhere. He was considered to be in a rather critical condition. Oct. 11th. Coughed up a cast during the day, and another at night. Their appearance was very different from what they had been in the commencement of the disease. They were less solid—like strings of ropy mucus, and were expelled without much effort.

Oct. 12th. Began the administration of potassium iodide gr. x, and ammonium carbonate gr. v, three times daily, combined. There were no more bronchial casts raised from this date. The bleeding from the nose continued until the 14th, when the blood recovered its coagulability—after bleeding about ten or twelve drops a clot formed in the nostril. The oozing from the gums continued for several days longer. On the 15th the thermometer registered the normal temperature in the axilla—the first time in five months. The pain and inflammation disappeared from the knee, and the soreness from the chest. The skin became fair, and the purplish blotches left the face. In fact, every morbid symptom vanished like the clouds from the sky after a storm. The remedy acted like a specific. The patient gained nineteen pounds in weight in one month from the time he began taking the medicine. The week ending Nov. 10th he gained seven pounds, and the week preceding that six pounds. Discharged to duty Nov. 18th weighing one hundred and thirty-four pounds.

Richardson defines croup as "a disease of an inflammatory nature, in which the blood is specially disposed to undergo separation of its fibrinous parts, in which there is inflammatory exudation into the windpipe" (*Diseases of Modern Life*, page 58). Croupous bronchitis is a disease of a similar nature. "According to Kretschy's view, the blood only can be the source of the rapid and inexhaustible supply of fibrine as the cementing substance for the croup-membrane, and not the epithelial cells; the escape of cells also taking place from the bloodvessels" (*Ziemssen's Cyclop. Pract. Med.*, vol. iv., Amer. ed., page 455).

Riegel, in his survey of the clinical symptoms of croupous bronchitis, (*Ziemssen's Cyclop.*) does not once refer to the hemorrhagic tendency of the blood in the advanced stages of the disease, which was a prominent symptom in the present case, and which is so natural a sequence of the defibrinated condition of the blood. I, therefore, infer that it must have been absent in the cases heretofore reported.

Another anomalous symptom was the inflammatory condition of the right knee joint. Its pathological connection with the bronchial trouble I cannot make out; but that it was due to the same morbid cause is probable, for the reason that it was amenable to the same remedial agent.

Unfortunately for our patient, the disease displayed its characteristic tendency to relapse. He was returned to the hospital Nov. 30th, having been away but twelve days. Paroxysms of coughing, harsh and hard, with a great straining effort to raise the casts. Those expectorated were small, from the smaller bronchi, and short, not branched, evidently broken off at the bifurcations. Temperature elevated in the evenings. General health otherwise good. During the first week of admission, the patient was kept upon potassium iodide gr. v three times daily. Under this treatment there was only an amelioration of all the symptoms—the cough became looser, the bronchial casts were raised whole, the straining effort of coughing ceased, and the evening temperature fell to normal. On the 8th gave potass. iodide in x gr. doses, and every symptom immediately disappeared, except a slight soreness about the lower portion of right lung in front of the original seat of the disease. Symptoms of iodism were quickly produced by the gr. x doses.

Following this relapse was an attack of herpes zoster, with its characteristic neuralgic pains, seated on the left side of the neck and shoulder, and upper part of left breast. Discharged to duty again January 13, 1879, weighing 141 lbs.

In the spring of 1879, he suffered another relapse, which followed an attack of cold, to which the patient is very liable on the slightest change of weather. He was treated on board ship with potassium iodide, and when he reached the hospital all the active symptoms had subsided. He remained under treatment for six months, and was kept almost continuously upon the iodide, without, however, eradicating the dyscrasia.

Another interesting phase of the disease was developed during this stay in the hospital. An eruption of an impetiginous character appeared on the forehead, at the edge of the hair, in the eyebrows, and on the tragus, and in the meatus of the ear. It appeared first as a pointed elevation, on an inflamed and raised base, occurring either singly, or in groups of three or more points. Suppuration followed, and a thick crust formed, which left a red scar after dropping. In the groups the suppuration extended from one point to another, until the whole patch was covered by one scab. The parts about the ear became swollen—almost closing the meatus. The eruption was always accompanied by a slight bronchial catarrh, and the latter ceased with the former, which rapidly dried up and disappeared under gr. x doses of potassium iodide. The patient usually complained of supraorbital neuralgic pains at the same time. Several successive crops of the eruption appeared, reappearing when the remedy was suspended, or when given in diminished doses, on account of iodism. The general health remained good.

> "Waldenburg reports the case of a girl, eight and a half years of age, who, for more than four years, had every few days expelled branched masses. . . . Waldenburg noticed that after the recovery from bronchial croup an impetigo of the scalp, which had existed for a long time, increased very much, thus suggesting the idea that possibly there was a certain nosological connection between the bronchial croup and the impetigo" (*Ziemssen's Cyclop. Pract. Med.*, Amer. ed., vol. iv. page 468).

In the present case no bronchial casts were expelled during the prevalence of the eruption, and it strengthens the idea suggested above. The patient was ultimately discharged to duty August 6, 1879, with his weight still further increased by five lbs. His health remains good at the date of writing (Oct. 4, 1879). The impetiginous eruption continues to appear about the head, but is easily controlled by potassium iodide.

Article XIV.

Iritis Spongiosa (Fibrinosa). By Swan M. Burnett, M.D., Surgeon in charge of the Ophthalmic Division of the Central Dispensary, Washington, D. C.

Clinicians have been accustomed to classify iritis in one of two ways: either (1) in accordance with its presumed etiology, calling it *syphilitic*, *rheumatic*, etc., or (2) most commonly with special reference to its pathology, taking the kind of exudation as expressive of the particular form of inflammation present. In the latter case it was called *serous*, *plastic*, or *suppurative*, these three forms of exudation being the only ones recognized by writers on the subject up to a very recent period.

The serous, plastic, and suppurative (also called parenchymatous) forms are quite distinct as types, not only in the character of their exudations, but also to a greater or less degree in their clinical history, course, termination, and treatment.

The *serous* form develops slowly, without pain, with a normal or moderately dilated pupil, with but little, if any, injection of conjunctiva or subconjunctival vessels, and runs a long course. It is usually accompanied by a punctate deposit on the posterior surface of the cornea, the aqueous humour being more or less cloudy. It usually ends without any adhesions or other serious damage to the eye. The treatment is mainly hygienic and expectant, and constitutional or not in accordance with its discernible cause.

In the *plastic* form the inflammatory symptoms are more pronounced and more rapid in their onset, and pain is a prominent symptom, being usually referred to the frontal or other branch of the fifth pair, and worse at night, particularly the early hours of the morning; there are circumcorneal injection, photophobia, and lachrymation; the pupil is contracted, the iris tissue engorged and discoloured, and there are often nodules on its surface; organizable lymph is thrown out, and the iris is found attached in points to the anterior capsule of the lens. Treatment; antiphlogistics, mydriatics, and sometimes mercury.

In the *suppurative* form, the iris is very much swollen, and of a yellowish tinge, and there is usually a formation of new vessels in its substance. The leucocytes frequently pass out from the tissue of the iris into the anterior chamber, and collecting at the bottom, form an hypopyon. The pain, inflammatory symptoms, and the treatment are about the same as in iritis plastica. Prognosis usually good.

Though these three forms are, as we have said, quite distinct as types, they may, and frequently do, merge into each other. Thus we may have a sero-plastic, and a plastico-suppurative iritis, though rarely, if ever, a sero-suppurative form. Moreover, each form of inflammation may pass over to the ciliary body and choroid, and we will then have an irido-cyclitis or an irido-choroiditis of either of the three varieties.

Within recent years there have been published several cases of a form of iritis which presents some very peculiar features, and which seems to be entitled to a distinct place in the classification of iritic inflammations, made on the basis of the character of the exudation.

As no full description of this form is to be found in the recent text-books,[1] and the cases reported are scattered throughout various ophthalmological journals, I have thought it might be profitable, in reporting the following case, to collect together the cases I have been able to find, in order to study their clinical history, and to determine whether we have a right to add another form of iritis to our already extensive nosological list.

CASE I.—R. G., a youth of 17 years, of good constitution. About two years before he came under my care, he had a gonorrhœa, which was accompanied by rheumatism. It would hardly be just to infer from this, however, that the rheumatism was gonorrhœal, since his father has for years been subject to attacks of the same character, and has had, too, an attack of iritis in each eye with adhesions as the result. During this attack of rheumatism, he had a severe iritis in the left eye which left adhesions after its disappearance. Some months after he had another attack in the same eye, with further adhesions. After the subsidence of inflammatory symptoms, an upward iridectomy was made, which was not successful, and at present there is complete closure of the pupil in that eye, with bulging forward of the iris. T. 2; p. l. It is subject to attacks of more or less severe congestion and irritation. Once before he had some congestion of the right (sound eye), but it subsided in a few days. I saw him, for the first time, on the 29th of June, 1879. There was then a moderate episcleral injection, some photophobia, and pain, iris appeared normal, and the pupil dilated well, though not *ad maximum*, under atropia. On the 30th, the conditions were much the same, and an ophthalmoscopic examination revealed an unusual redness of the disk and tortuosity of the veins. Did not see him again until the 3d of July, when the inflammatory symptoms had very much increased; ordered three leeches to the temple. On the 4th, six more leeches were applied, on account of the pain. The photophobia and general inflammatory symptoms had increased, but there was no marked chemosis. He was using all the time a solution of four grains of sulphate of atropia to the ounce of water four times a day, and hot applications to the eye. On the 6th there appeared rather suddenly an extensive chemosis and swelling of the lids. Chemosis more pellucid than red; great pain. The cornea appeared very hazy, but on close inspection the epithelial layer was found to be intact, so it was certain I had to do with an exudation into the anterior chamber. The chamber was filled with a grayish substance, the iris and pupil being only dimly seen through it.

Drs. Mackall and Lincoln, who had treated him and his father in their former attacks of rheumatism and iritis, were kind enough to see him

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[1] Wecker, in his Therapeutique Oculaire, 1879, makes a bare mention of this peculiar form of exudation, first described by Schmidt, but considers it under the head of simple iritis.

with me, and as it was thought that the atropia had not acted well in the attack of the other eye, the mydriatic was changed to duboisia. It may be remarked here, that the change was attended with no alteration in the course of the affection, and it was afterward demonstrated that the eye bore atropia quite well. He was also ordered 2 grs. calomel every two hours, and inunctions of ointment of mercury twice daily. The chemosis was so great, that I was somewhat fearful for the integrity of the cornea. I therefore made some punctures and let out a quantity of the fluid. On the 7th the chemosis had entirely disappeared, and the pain was altogether gone. There was now visible a narrow segment of the iris at the upper part of the cornea, the exudation having a sharply defined border. By throwing the oblique light in the proper direction, it could be plainly seen that the exudation extended from the plane of the iris to the posterior surface of the cornea. On the 9th there was still no pain, and the exudation showed a sharp edge all around. It was not circular in shape, but showed angles at points. The narrow rim of iris outside was somewhat though not markedly altered in appearance. 10th. Slight pain after exposure to light, exudation still diminishing from all sides at about equal rate. Its fibrinous character is quite discernible by means of the oblique light and a magnifier. On the 12th the exudation was confined to the pupillary opening. The mercury was stopped, as no ptyalism had been produced, and the absorption was progressing well. 16th. Only a few fibres visible in the pupillary space. The pupil itself was about the size normal to that age, regular in shape. With the ophthalmoscope the vitreous appeared cloudy so that the fundus was not visible in detail. The veins appeared slightly but not excessively tortuous; V. obscured. 18th. Still one or two fibres of exudation visible in the pupillary field; vitreous a little clearer. No evidence of an exudation similar to that in the ant. chamber in any part of the ophthalmoscopic field. 22d. No trace of exudation. Some accession of rheumatism in foot and side, and a slight increase of irritation in the eye; vitreous still cloudy. Ordered iodide of potassium. 25th. Some pain last night and the night before, but no return of exudation. 29th. No pain for several days; V. improving. Aug. 1st. Vitreous clearer; V. still improving. 9th. Went to country. 22d. Eye perfectly clear, but vitreous slightly cloudy; V. $\frac{4}{18}$. Synechia below and above. Sept. 1st. V = $\frac{5}{6}$. No signs of irritation; vitreous clear.

The two following cases described are those of Herman Schmidt, and are reported in the *Klin. Monatsbl. f. Augenheilk.*, 1871, p. 94.

Case II.—A man 23 years of age. He had previously had attacks of rheumatism. On June 11, iritis began in the right eye. He was seen first on the 13th. An exudation of a grayish colour filled the outer half of the anterior chamber. A subsidence of inflammatory symptoms on the 15th, though there were some remains of the exudation on the lens capsule in the pupillary space. By the 17th it was all gone; some small synechia remaining.

Case III.—Man, 26. Sudden pain and dimness of vision. First seen five days after attack. Great conjunctival and subconjunctival injection, broad red ring around cornea, which latter, however, was clear. Ant. chamber filled with a substance which was taken for a dislocated lens. It was bounded upward and outward by a sharp crescentic line. Iris discoloured and swollen. T. slightly +. On the second day of observation the clear space at the upper and outer part of ant. chamb. larger, and the mass shows angles in other places. On the third day there was an extravasation of blood in the anterior chamber. Fourth day, pain gone and mass still decreasing in size. On the twelfth day it was entirely gone.

The next cases are those of Dr. Gunning, recorded also in *Klin. Monatsbl. Augenheilk.*, for 1872, p. 7.

CASE IV.—A man, 45, syphilitic taint, seen first on the eighth day of the disease. The eye at that time presented the appearance of a parenchymatous keratitis. Great conjunctival injection and pain. By focal illumination the ant. chamber was seen to be filled with a lens-like substance, gray and opaque, limited above by a sharp line. Cornea clear. T. slightly +. The mass was taken for a luxated lens. On the next day, however, the mass had disappeared. During the next two weeks there was a slight return of the exudation which disappeared in twenty-four hours.

CASE V.—A middle-aged man had rheumatism in the East Indies, and was treated one year previously for rheumatic cyclitis. He presented himself at this time with an intense chemosis, but no sign of iritis. This chemosis was thought to be due to the atropia used, and its employment was suspended, but with no improvement. During the fourth week of attack ant. chamb. filled with exudation. In eight days it was entirely gone. Some trouble in vitreous, but he made a complete recovery.

CASE VI.—Man 50, syphilitic iritis with much irritation. Exudation in lower part of anterior chamber. No further history of the case.

The next case is related by Dr. E. Grüning in the *Archives of Ophthalmology and Otology*, vol. iii. p. 20.

CASE VII.—Man, 40, who two years previously had syphilis with cutaneous eruption and an iritis in left eye. Is now affected with gummy iritis in right. On second day, anterior chamber filled with spongy exudation. On third day exudation appeared to be transformed into a lens-like substance with a sharp, convex edge upward and inward. On the fifth day exudation gone, leaving no trace; pain also gone.

The next is reported in the same number of the same journal, page 71, by Dr. C. J. Kipp.

CASE VIII.—Man, 23, contracted syphilis thirteen months before the iritis appeared. The right (affected) eye presented the usual appearances of iritis gummosa in its early stages, during the first two days. On the third day a grayish exudation was seen covering the condyloma and extending downwards. On the 5th day this filled the entire chamber except at its periphery. It resembled a lens in form, its edges being sharply defined; on the 7th day it began to diminish, and on the 14th day was entirely gone.

This as well as the preceding case was treated by mercury in addition to antiphlogistics and mydriatics.

Dr. H. Knapp tabulates, in vol. vi. Nos. 1 and 2, *Archives of Ophthalmology and Otology*, in a paper on "Cataract Extractions," five cases in which spongy iritis was a reactive process after the operation. He mentions that he has seen it after iridectomy for glaucoma and in cataract extractions and in syphilitic and non-syphilitic iritis. He says he has notes of about eighteen cases of this form of iritis. The details of the cases are not given, but in his "remarks" he furnishes a general clinical history in close keeping with the other cases reported.

In vol. vii. p. 49 of his *Archives*, he describes a case of irido-choroiditis of this form which attacked both eyes at an interval of seven months.

CASE IX.—Man, 27. Was seen ten days after the commencement of a severe iritis in right eye. Had had gonorrhœa a short time before. Two days after admission lower half of the iris appeared duller than the upper, and the lower half of the pupil was occupied by a lattice work of irregularly interwoven, partially delicate and partially coarse, grayish fibres. On the fourth day the whole chamber was filled with the spongy-looking, gray, somewhat yellowish looking mass, which was not compact but like the cocoon of a silk-worm. The irritative symptoms, which had gradually increased, were now at their height. There was œdema of the lids and conjunctiva, some sero-mucous discharge, marked circumcorneal injection, the dilated vessels being dark red. T. n., V. reduced., V. F. good. On the fifth day, the inflammatory symptoms abated, and the exudation had a more gelatinous aspect. On the sixth day it began to diminish in size with the usual sharply-defined boundary. In five days the whole mass was absorbed, and the inflammatory symptoms had almost entirely disappeared. As soon as he was able, Dr. Knapp examined the fundus, and found the veins dark-red and tortuous and the arteries very thin. In the lower part of the fundus was a grayish opacity larger than the disk, covering the retinal vessels, with ill-defined edges. This opacity gradually diminished, and on the twenty-fifth from the day of admission it had disappeared and V. was restored. In seven months he had an attack in the left eye which was similar to that in the other, except that there was no spongy exudation in the vitreous, and there was a *second* exudation covering the first while it was in process of absorption.

From this number of cases, limited though it is, we shall be able to draw a pretty distinct clinical picture of the affection as differentiated from the other three forms of iritis. And first of

The Symptoms.—Prominent among these is pain, which at the height of the disease is as acute as in the plastic form. Up to the period just preceding the exudation it is usually not very intense, and similar to that in the early stages of the plastic form. From the time, however, when the severe inflammatory symptoms set in, until the process of absorption begins, the pain is usually excessive. The sudden subsidence of the pain as soon as absorption begins is a marked peculiarity of this form of iritis. The general inflammatory symptoms are always of a high degree, the chemosis particularly being usually much more marked than in the plastic form.

The exudation begins with the pronounced symptoms of irritation, and in many cases occurs suddenly. At one visit the ant. chamber may be perfectly clear, at the next filled with the gray mass of exuded matter. In other cases it is exuded more slowly, and begins most commonly in the pupillary space or below, and, it is highly probable, in all cases completely fills the ant. chamber. In those cases where it is represented as only partially filling it when first noted, the process of absorption had most likely already begun.

The absorption of the exudation takes place with varying rapidity. In one or two cases it was accomplished within twenty-four hours; but usually it is longer, generally five to eighteen days elapsing before all traces have disappeared. The course of the absorption is peculiar and characteristic. It begins invariably at the periphery, and the mass gradually diminishes from all sides at an equal pace, the pupil being the last to get clear.

As to the *character* of the exudation, it is without doubt, in its earlier condition, fibrous. Both Knapp[1] and Alt[2] have examined the substance.

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[1] Archives of Oph. and Otol., vol. vi., Nos. 1 and 2, p. 124.

[2] Ib., Nos. 3 and 4, p. 365.

Knapp says that "it consisted of a dense network of very delicate fibrils inclosing white and red blood corpuscles, and of a finely granular substance." His opinion as to the nature of the mass in its different aspects is that—

> "When the substance is uniformly semi-transparent (hyaline, gelatinous, like a dislocated lens), it probably consists exclusively, or almost exclusively, of coagulated fibrine; if it has a grayish or whitish-gray colour, the fibrine seems to contain a certain amount of white blood corpuscles, which, when accumulated in clusters, will appear like whitish dots. The yellowish or yellowish-green tinge indicates, in my opinion, the presence of red blood corpuscles."

Alt says:—

> "The exudation has two well-defined parts. The one perfectly homogeneous, like the gelatinous exudation. . . . The other, lens-like in shape, consists of a minute network of exceedingly fine threads of fibrine, the meshes of which, during life, were probably filled with exudation. . . . These anatomical conditions explain fully what has been observed by clinicists. The two layers are the two subsequent stages of exudation, described as being first 'spongy,' and then 'gelatinous.'"

In attempting to account for the origin of the fibrine, Alt says that it is most probably due to hemorrhages. The blood being extravasated into the iris, the plasma of the blood is filtrated through the iris tissue into the ant. chamber and coagulates there. The facts, it seems to me, are against any such a supposition. The slightly altered appearance of the iris, particularly in the idiopathic forms, precludes the possibility of an extravasation of blood into its tissue. As soon as any portion of the iris is visible when absorption has once begun, it is seen to be almost, if not quite, of its normal lustre, and after the attack has passed over it is seldom found to be discoloured or otherwise materially altered in appearance. Such could not by any possibility be the case if there had been an extravasation of blood into its parenchyma.

Besides, it is not necessary that there be hemorrhages in order to have an exudation of blood plasma. This can take place through the distended walls of the vessels, and no doubt does so in the various forms of "croupous" exudation. In fact, we should be inclined to look upon this peculiar exudation as similar to those "croupous" forms that are absorbed rather than thrown off.

Diagnosis.—The differential diagnosis is fixed of course by the exudation. As soon as the peculiar character of this is recognized, there is no further difficulty in deciding that we have to do with an iritis spongiosa. The special difficulty in the diagnosis is the liability of confounding it with a *diffuse keratitis* or a *discoloration of the lens* into the anterior chamber. In the early stage when the anterior chamber is filled with the mass almost completely veiling the iris and pupil, at a first glance the picture is very like that of a diffused keratitis. The usually excessive chemosis which is never present in keratitis, and a closer examination by means of the oblique light, showing the epithelium of the cornea to be intact, will fix at once in the mind of the surgeon the precise nature of the affection.

In the second stage, when the absorption has already begun, the sharply defined outline of the mass and its gelatinous appearance can readily lead to a false diagnosis of a lens luxated into the anterior chamber, particularly as such a condition is most usually accompanied by marked symptoms of irritation. A close examination with the oblique light, particularly if a magnifying lens is used in conjunction with it, will at once dissipate this source of error. The fibrous nature of the mass, nearly always apparent in some of its parts, and the usual lack of regularity of outline, and particularly the method of absorption, all point to iritis spongiosa.

Like the other forms of iritis it may appear in the *typical form*, in which the iris is left perfectly free from any adhesion and in a perfectly normal condition. It may, however, be conjoined with the plastic form, in which, on subsidence of the inflammation, adhesions to the lens-capsule are to be found. We have no cases on record where it was united with the serous or suppurative form. That it may pass over into the choroid is shown in the case quoted from Knapp. In some instances where the peculiar exudation is not demonstrable in the posterior chamber, the vitreous is cloudy.

As to *etiology*, a glance at the cases reported will show that it may arise from any of the causes usually in operation for the production of the other forms of iritis, such as syphilis, rheumatism, iridectomy, etc. It will also be observed that all the cases reported thus far are of the *male sex*. The number is not sufficient, however, to allow us to determine with any positiveness as to a law governing its appearance in the two sexes.

The *prognosis* in the typical form is, according to the statistics, good, and when conjoined to the plastic form does not seem to at all increase the danger.

The *treatment* is that usual in the plastic form, that is, antiphlogistics, mydriatics, anodynes, and hot applications. One would be naturally inclined to resort to mercury very promptly in such cases, but unless it is otherwise indicated by some dyscrasia, it would scarcely be needed to facilitate the absorption of the mass, since its natural course is to a rapid and complete disappearance.

SEPT. 18, 1879.

ARTICLE XV.

CYANOSIS. CONGENITAL ABNORMALITY OF THE HEART. TWO CASES. ONE AUTOPSY.

By SAMUEL C. BUSEY, M.D., Professor of the Theory and Practice of Medicine, Medical Department of the University of Georgetown, and one of the Attending Physicians to the Children's Hospital, Washington, D. C.

DURING my service at the Children's Hospital the two following cases, presenting clinical histories almost identical, have come under my observation. The first was an out-door patient, and was under observation several months previous to death.

CASE I (Notes by Dr. Geo. N. Acker).—R. McD., white, aged 6 years and 11 months. Born healthy and well, and continued in good health until three years of age. Then had an attack of intermittent fever; after which he was easily tired, and the colour of his tongue, gums, lips, and nose became darker, which has constantly increased to the present time.

Admitted September 29, 1874. His tongue, gums, and lips are now of a dark-purplish colour; face and eyes congested; fingers and toes clubbed and discoloured; bowels usually loose; appetite good; sleep is disturbed; breathes heavily during sleep; tires very soon; respiration disturbed on slight exercise. The sternum pushed forward. Apex-beat in left fifth intercostal space three-fourths of an inch to right of left nipple-line; impulse not marked. Area of cardiac dulness increased; enlargement and apparent displacement of heart to the right. The two sounds heard most distinctly at midsternal-line, opposite the fourth rib; the first very indistinct, the second sharp and clicky. Pulse frequent, 120, small, barely perceptible. Lungs healthy; respiration laborious and hurried. No cough.

This patient was brought to the hospital occasionally for several months previous to his death. He died in a convulsion. No autopsy.

CASE II (Notes by Dr. S. S. Adams).—Admitted to hospital July 31, 1879. C. W., coloured, aged 7 years and 8 months. Tall and slender; walked at three years of age; previously he was a healthy boy. Then his parents observed that when taking exercise he was seized with shortness of breath, and his lips and finger nails became purple; these attacks have increased in frequency. Now has rapid breathing all the time; also attacks of dyspnœa when excited or disturbed. Fingers and toes are clubbed; nails purple. Lips, gums, and tongue dark purple. Slight exophthalmus; palpebral and conjunctival congestion. Pains in calves of legs, over calvarium, and general hyperæsthesia of the skin. Appetite poor; bowels constipated; expression anxious. Sternum and chest walls projected forward. Impulse beat in the fifth intercostal space three-fourths of an inch to the right of left nipple-line. Slight thrill felt upon application of hand over præcordial region. Heart and respiratory sounds normal; respiration quiet when still and calm. Pulse 112; regular, full, and firm.

On the 7th of August he suffered from an intense headache and some fever; temperature 100.2°, which continued during the 8th. At 7 A. M., 9th, after a good night's sleep, had a severe convulsion, lasting five minutes; characterized by difficult breathing, fixation of the eyeballs, stiffening of muscles generally, foaming at the mouth, unconsciousness, and stertorous breathing. Coma gradually increased till death took place at 12 M.

Post-mortem three hours after death. Body well developed; general appearance good. Heart *in situ;* wholly uncovered by lung; measured 4 inches transversely at fourth rib; base on a level with third rib; apex opposite lower edge of fifth rib; ventricles only seen; apex mainly constituted by right ventricle, and tipped with white; whole surface of heart dark purple; veins full of dark blood; right auricle and vena cava distended with blood.

Examination after maceration in alcohol for twenty-three days. Measurements of heart—largest circumference, $7\frac{3}{8}$ inches; right ventricle at base, $4\frac{6}{8}$ inches; left, $2\frac{5}{8}$ inches. Walls thickened—right, $\frac{5}{8}$ inch; left, $\frac{4}{8}$ inch. Auricles rudimentary. Inter-ventricular septum pervious. Aorta arising from both ventricles; greatly enlarged in ascending and transverse portions. Pulmonary artery arising from right ventricle by an opening not larger than the smallest sized probe, and expanding into a pouch large enough to admit the first joint of the thumb. Vena cava emptying into the rudimentary right auricle, or what seems to be an expansion of the cava. Pulmonary veins empty into the left ventricle. Large hemorrhagic infarction in lower portion—posterior—of lower lobe of left lung.

These two cases present the ordinary symptoms of cyanosis. In neither was the disease manifest previous to the end of the third year of age; one lived nearly three and the second nearly five years after the appearance of the first symptoms. The exophthalmus, pains in the calves of the legs, and cutaneous hyperæsthesia which were present in the second case, are not enumerated among the symptoms by the authors whom I have examined.

The communication between the ventricles, and of both ventricles with the aorta, together with the very minute opening of the pulmonary artery into the right ventricle, show that but a very small portion of blood could have been oxygenated. The mass of the fluid repeated the circuit of the systemic circulation, and must have been propelled into the aorta with a greatly increased force by the simultaneous systoles of the hypertrophied ventricles. This circumstance, perhaps, offers an explanation of the constant pain, and exophthalmus, as it does of the "full and firm" pulse, which is unusual in cases of cyanosis.

ARTICLE XVI.

NEUROMA INVOLVING THE ULNAR NERVE; EXCISION WITH ENTIRE RELIEF FROM PAIN. By WM. M. FINDLEY, M.D., of Altoona, Pa.

J. D. F., æt. 37, slight build, but wiry—always healthy—was wounded in the left elbow region, by a minie-ball passing obliquely from the outer side of the forearm some two inches below the elbow joint, under the brachial aponeurotic expansion, and emerging about an inch above the internal condyle of the left humerus. Severe hemorrhage ensued, and, after a slow convalescence, recovery resulted, leaving a rather good arm. However, soon after, he became aware of a tender spot, back of and above the internal condyle of the left humerus, and soon discovered an enlargement which as time wore on became very painful, especially on pressure or on striking it, until finally, in the early part of this year and for some time before, the paroxysms occasioned were of such intensity and duration that they were almost unbearable even with anodynes. The tumour enlarging, and the pain increasing, he determined to undergo operation for removal of the same. My diagnosis was neuroma of the ulnar nerve of the left arm, and the intention was to resect the same, stretch the nerve, and reunite by suture.

Operation.—Accordingly, on the 30th June, 1879, with the aid of an assistant, after deep etherization, an incision of $1\frac{1}{2}$ inches was made, exposing a neuroma of $2\frac{3}{4}$ inches length in the direction of the axis of the nerve and about $1\frac{1}{2}$ inches in diameter, which, if removed as intended, would not have allowed stretching sufficient to reunite the operated ends without great damage to the integrity of the whole nerve. Upon discovering this, I resorted to what seemed to me the next best thing; finding that the fibres of the nerve were all involved with the exception of two or three coursing over the upper two-thirds of the neuroma, and only losing their separate condition low down towards the elbow, I determined to use elastic ligatures, and remove all *except* the slight portion not implicated in the upper part of the tumour. By inserting strong elastic ligatures through the centre, and notching the extremities carefully so as not to involve the few fibres I was so anxious to preserve, I tied it firmly in two portions and then threw a third and stronger ligature around the whole, which now appeared through the external wound as a flesh-coloured substance of very firm texture and the size of a common hickory-nut. The incision was left gaping, and the whole was dressed with a wash of chloral hydrate ʒiv to water Oss, constantly applied.

Several very violent paroxysms of pain were suffered from during the first six or eight days, but they always promptly yielded to hypodermic injections of morphia and atropia.

The tumour, having such a broad base, did not readily slough off, so I removed with scissors one half of it on the sixth day and the other half on the twelfth day, and brought the granulating surfaces of the external wound together, in order to prevent adhesions below as much as possible.

The result of the operation as to paralysis of the arm was peculiar; the portion supplying the little and ring fingers becoming affected gradually as the ligatures cut through but returning nicely afterwards by the use of electricity, but of course not entirely. The cutaneous surface over the ulnar side of the forearm was but slightly changed, and the muscles of the forearm showed no change whatever. However the inability to approximate the fingers strongly, together with marked wasting of the abductor and flexor brevis pollicis, as also the adductor pollicis, seemed to indicate that in the inflammatory process, either of the new formation or of the cicatrization after the operation, the median nerve had also been somewhat implicated, and that neurility had been destroyed or masked in some fibres of the same. Constant use of friction, together with the continued and interrupted currents, has done much to restore the parts to their normal condition.

Finally, complete relief from the paroxysmal attacks of pain, and from the constant dread of injury, with returning usefulness, are the results which to the patient are inestimable, and appear to be lasting.

ALTOONA, Nov. 1, 1879.

REVIEWS.

ART. XVII.—*The Medical and Surgical History of the War of the Rebellion.* Part II. Volume I. *Medical History.* Being the second medical volume. Prepared under the direction of Joseph K. Barnes, Surgeon-General United States Army. By JOSEPH JANVIER WOODWARD, Surgeon, United States Army. First issue. 4to. pp. 869. Washington: Government Printing Office, 1879.

THE frequency with which the diseases included under the class of the alvine fluxes occurred among our troops during the war of the Rebellion, their importance, and the great mortality, larger than that from any other group of diseases, which directly or indirectly resulted from them, has induced Dr. Woodward to devote the second medical volume of the History of the War exclusively to their consideration. The editor has not contented himself with presenting to the reader the usual statistical tables, together with the reports of cases and autopsies furnished to the Medical Department by army surgeons, and the description of the microscopic as well as the gross appearances of the specimens in the pathological collection at Washington, but believing "that the time had arrived when modern observations might be profitably contrasted with the records of the past, and the historical basis of the dominant opinions of the present day be subjected to careful and critical scrutiny," he has added to the volume an analysis of the literature of the fluxes, thus increasing very materially its value to the student. In doing this he has availed himself freely, of course, of the resources of the National Medical Library, which afforded him opportunities for research not hitherto within the reach of an American author.

As the editor remarks in his preface many errors of fact are scattered through the text-books, simply because the authors have copied from one another without always taking the trouble to verify the reference for themselves. In order therefore to secure the greatest possible accuracy, he determined, when he undertook this work, not to cite any authority not before him at the time of writing, and to give in every case not only the name of the author, but also the edition and page of the work from which he has quoted. This has been possible in all but a very few instances. In these he has mentioned the actual source of his information. Since the incorporation of so large a number of quotations into the body of the text would have necessitated a very material increase in the size of the volume, he has thought it better to present them in the form of foot-notes, using for this purpose a much smaller type whereby they can be compressed into comparatively little space.

The volume is divided into four sections. The first section contains statistical tables, accompanied by remarks, as to the prevalence of diarrhœa and dysentery in the army. From it we learn that these diseases made their appearance at the very beginning of the war, not infrequently commencing their ravages in regiments before their organization was completed, and that as the war progressed the number of their victims almost rivalled that of the wounded. The extent to which they prevailed will be appreciated from the fact that 1,585,196 cases of sickness, with 37,794 deaths among the white soldiers from May 1, 1861, to June 30, 1866, and 153,939 cases of sickness, with 6764 deaths among the coloured troops from July 1, 1863, to June 30, 1866, are attributed to them. These figures, large as they are, Dr. Woodward shows, do not accurately represent the full amount of the mischief done by this class of diseases, for many cases which were reported as enteritis, inflammation of the bowels, peritonitis, hemorrhage from the bowels, etc., undoubtedly belong to this category. But in addition to this there were 29,331 deaths from disease in which the disease is not specified, and 24,184 deaths from unknown causes. Assuming that these deaths from unknown causes were distributed between disease and wounds in the same proportion as those in which the cause is recorded, and that the deaths from diarrhœa and dysentery, among the deaths from unspecified diseases, bear the same proportion they do in the case of those deaths in which the particular disease is stated,[1] we must add 12,707 deaths to the sum of the deaths among the white and coloured troops from diarrhœa and dysentery given above, which makes a grand total of 57,265 deaths from these diseases in the Federal army during the war. Even this estimate probably falls short of the truth, for a large number of the deaths from unknown causes, or from unspecified diseases, were of prisoners in the hands of the Confederates, among whom the fluxes were excessively prevalent and fatal. It is more difficult, the editor says, to estimate correctly the number of soldiers actually discharged from the service in consequence of diarrhœa and dysentery. The reports of the discharges on surgeon's certificate of disability give 17,389 white and 359 coloured soldiers discharged for these diseases. But unquestionably among the 14,500 white and 540 coloured soldiers discharged for debility were many who were suffering from the chronic fluxes. So also were probably a certain proportion of those discharged for rheumatism, heart disease, anæmia, inflammation of the liver, dropsy, etc. "Moreover," he adds, "at the close of the war many thousands of diarrhœal patients, sick in the general hospitals, were mustered out of service and permitted to go to their homes, so that their names do not appear on the lists of those discharged on surgeon's certificate of disability." A few deaths from diarrhœa and dysentery not included in the above statistics also occurred among the Indians employed in the United States service.

The cases of acute dysentery and diarrhœa were much more numerous than those of the chronic forms of these diseases. Thus among the white troops there was one case of chronic to every six of acute diarrhœa, and one case of chronic to every nine of acute dysentery; and among the coloured troops one case of chronic to every nine of acute diarrhœa or dysentery. It must, however, be remembered that the number of acute cases, especially those of acute diarrhœa, is considerably larger than the actual number of individual soldiers taken sick, as the same soldier may suffer from repeated attacks of the disease until at last it becomes chronic. While, on the other hand, chronic cases being more or less continuous the proportion of individual soldiers to the whole number of cases is larger. This circumstance must not be forgotten in considering the comparative mortality of the acute and chronic cases. This was as follows :—

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[1] The proportion of deaths from disease to deaths from wounds among the white troops was $1\frac{7}{10}$ to 1, and among the coloured troops, $8\frac{8}{10}$ to 1. The ratio of deaths from diarrhœa and dysentery to deaths from all other diseases is for the white soldiers as 1 to $3\frac{1}{2}$, and for the coloured soldiers as 1 to 4.

Among the white soldiers the proportion was, one death to 395 cases of acute diarrhœa; one to 57 cases of acute dysentery; one to every 6 of chronic diarrhœa; and one to 8 of chronic dysentery. Among the coloured troops it was, one death to 83 cases of acute diarrhœa; one to 17 of acute dysentery; one to every 4 of chronic diarrhœa; and one to 4½ of chronic dysentery.

Dr. Woodward's tables show that among the white troops these diseases increased in severity as the war progressed. Thus, although the largest number of cases occurred, and the ratio of cases to strength was greatest during the second year, the mortality did not attain its maximum until the last. In the case of the coloured troops a similar increase in the total mortality from diarrhœa and dysentery, with the progress of the war, was, however, not observed. The ratio of deaths to strength was, in fact, greatest during the first year represented by the returns, and diminished during subsequent years. But this was as true of other diseases as of the fluxes, and was undoubtedly due to the fact that the coloured recruits were, in a large number of instances, escaped slaves, who had suffered from exposure and privations before enlisting, and that frequently, from want of discipline or other cause, the hygienic conditions of their camps were of the most unfavourable character.

The fluxes were more frequent and fatal in the central region than in the Atlantic, and more so in the latter than in the Pacific. Expressed numerically the mortality from these diseases among the white troops was twice as great in the central region as in the Atlantic, and twenty times greater than in the Pacific. The editor, however, finds it necessary to modify slightly the statement which he made in "Circular No. 6" that dysentery and diarrhœa were more fatal when treated in Southern than in Northern hospitals. Although his investigations show that this statement is true, they have convinced him that the disparity is not so great as when he made it, and that it is partly due to other causes than mere difference of latitude, such, for instance, as the constant transfer of patients who could bear the journey from the Southern to the Northern hospitals.

Diarrhœa and dysentery prevailed in the army most extensively, both among the white and coloured soldiers, during the months of July, August, and September, in this following the rule generally observed in civil practice. They were excessively frequent and fatal in the Confederate Army, much more so it would appear than in our own; but, unfortunately, the means at Dr. Woodward's command were insufficient to enable him to determine with accuracy the extent to which they prevailed and the mortality which resulted from them; all the statistical or other reports which may have been collected in the office of the Confederate Surgeon-General having been destroyed at the time of the fall of Richmond. The prisoners in the hands of the Confederates suffered even more severely, the deaths among them from these diseases amounting to more than one-half the deaths from disease. At Andersonville alone there were between February 24, 1864, and April 17, 1865, 7352 cases admitted into the hospital, with a mortality of 5605, or, in other words, over 76 per cent. of the cases proved fatal. In the case of the Confederate prisoners in the custody of the United States, the mortality, although much less than among the Federal prisoners, was larger than among our own soldiers. As the former were generally provided with comfortable quarters either in well-ventilated wooden barracks or in tents, and with liberal rations, this difference is probably due to the fact that they were sometimes unduly crowded. This influence was increased in some places by local causes—as at Elmira, by the existence in the camp-grounds of a stagnant pond into which the drainage of the camp flowed for six months of the year. In other places, the prisoners suffered from malarial emanations.

The second section contains reports, and extracts from reports, by medical officers, in relation to diarrhœa and dysentery; and the third section, the records of such cases and autopsies as have been collected from the medical descriptive lists and case-books of the general hospitals. These occupy more than two hundred pages, but are not so numerous, and in most cases not so full, as we should have expected. They are reproduced by the editor generally, without comment.* He, however, occasionally notices the views presented by their authors in Section IV., in which the pathology and treatment of diarrhœa and dysentery are discussed. He groups the different forms of these diseases under the following heads: 1. Acute diarrhœa, including the cases due to inflammation of the intestinal mucous membrane, as well as those in which the intestinal lesion does not progress beyond simple irritation; 2. Acute dysentery, including both the simple inflammatory and diphtheritic forms; 3. Chronic dysentery, under which head the cases reported during the war as chronic diarrhœa, are also included; 4. Diarrhœa connected with tubercular ulcerations of the intestines. Under the first head he places all acute cases of flux in which the frequent liquid stools are unaccompanied by tenesmus; under the second, those acute cases in which tenesmus is a prominent symptom; and under the third, all chronic cases, whether tenesmus be prominent or not; the fourth group occurred chiefly among soldiers suffering from phthisis.

In the first group the lesions were generally seated in the cæcum and colon, more or less extensive tracts of the small intestines, especially the ileum, being often involved also. This statement will surprise many physicians, who still believe that diarrhœa is usually caused by inflammation of the small intestines, or by enteritis, as it is usually called, and that the inflammation does not often extend to the colon; but it is, we believe, in complete accord with the best modern pathological observations made in civil life. In some cases, however, in which it was positively known that the patient had suffered from diarrhœa, even so accomplished an observer as Prof. Leidy, of the University of Pennsylvania, was unable at the autopsy to discover any morbid change in any part of the intestinal mucous membrane. But this was unusual.

Generally in cases in which the disease had not been of long duration, the only intestinal lesion observable with the naked eye was a reddish discoloration of the mucous membrane, which, for the most part, occurred in patches, varying in colour from a pale pink to deep-red, or even livid purple, and in size from a few inches to several feet in length. These patches were more common in the ileum than the jejunum, and still more common in the colon, being oftenest found in the cæcum and sigmoid flexure. A continuous redness of the lower part of the ileum was occasionally met with, but this was of much less frequent occurrence than the condition above described. These patches, when the gut was held between the eye and the light, were seen to be due, in the majority of instances, to distension of the small veins. Occasionally, however, they were caused by extravasations of blood into the mucous membrane, which was generally more or less softened and covered with a glairy mucus. This was either colourless, or of a yellowish, reddish, brownish, or greenish hue, from admixture with bile or blood. More rarely the surface was covered with a creamy muco-purulent coating. When the disease had lasted for several weeks, or when the patient had suffered from repeated attacks of diarrhœa before his fatal illness, the bright-red colour of the patches was replaced by various shades of mahogany-red, brown, slate-colour, or green, and pigment deposits in the closed follicles were of frequent occurrence. Sometimes the portions of the peritoneum corresponding to these patches was in a condition of more or less pronounced hyperæmia, or thinly-coated with a layer of opaque yellow lymph.

The solitary follicles situated in the reddened patches were usually enlarged, and projected above the surface of the mucous membrane as minute elevations about the size of a pin's head, surrounded by a little circlet of increased vascularity. In the colon these elevations were sessile, but in the small intestines they had constricted necks, and presented the appearance of tiny polypi. Peyer's patches were also enlarged, but in a much less degree than the solitary follicle. The solitary glands of the large intestines were much more frequently ulcerated than those of the small. In the small intestines the pigment deposits referred to above were found principally in the solitary follicles, in the apices of villi, and in Peyer's patches, in which they caused what is usually described as the shaven-beard appearance. Occasionally, however, there were, in addition, diffuse pigment deposits in the mucous membrane, in the form of greenish or slate-coloured streaks or patches. In the large intestine the diffuse form of discoloration was more common, and generally more intense, than in the small. Indeed all the morbid changes were observed in cases in which the large intestine was involved in the inflammation to be more advanced in the cæcum, and sometimes even in the descending colon, than in the small intestine, which would appear to indicate that it is the part first affected in diarrhœa. The villi of the small intestine were also often swollen. When this condition was well marked, it gave the mucous membrane a plush-like appearance, which was highly characteristic.

We shall give the following summary of the microscopic appearances of the mucous membrane in cases in which death took place before the inflammatory process had proceeded to the stage of ulceration, in Dr. Woodward's own words :—

"At a very early period of the inflammatory process, an increased number of lymphoid elements will," he says, "be found scattered through the submucous connective tissue. This will be noticed especially in the immediate vicinity of the muscle of Brücke, where these elements are most numerous in the normal condition, but it will also be observed in all portions of the submucous tissue. It will frequently be observed in sections that the lymphoid elements occur in swarms around the peripheries of the small veins. They also appear in rows, and in more or less irregular stellate groups corresponding in outline to the serous canals of the connective tissue. . . . Besides the lymphoid swarm in the submucous tissue, this layer is generally infiltrated with an excess of plasma, by which the cohesion of the fibrillated matrix is loosened and the lymph spaces increased in size. To this cause, together with the vascular congestion and the presence of the lymphoid swarm, is due the thickening of the submucous layer which is generally present. Sometimes also the large oval nucleated cells observed by Basch and Thierfelder, in sections of the colon, from cases of diphtheritic dysentery, are found lying loose in the lymph-spaces, or adherent to their parietes. . . . Simultaneously with the increase in the number of the lymphoid elements in the submucous tissue, a similar increase takes place in the number of these elements in the adenoid tissue of the mucous membrane, and of the closed follicles. Here the increased number is not to be recognized by simple inspection, as in the case of the submucous connective tissue, but must be inferred, because, while the closed follicles increase in dimensions, and while the adenoid tissue of the mucous membrane becomes more bulky, pushing the glands of Lieberkühn preternaturally apart, the individual elements do not appear to be increased in size. The origin of these new elements is also a matter of inference rather than of observation; but in the absence of direct evidence of the multiplication of the normal cells by division, the probability that the new elements chiefly accumulate by migration from the bloodvessels, at once suggests itself as the most plausible view here as elsewhere. Of course, also, the possibility that the two processes may coexist, should not be overlooked. In sections the margins of the swollen follicles are more or less obscured by a swarm of lymphoid elements in the adjoining submucosa. . . . In the more chronic cases of intestinal catarrh without ulceration, as well as in the ulcerative cases, I have occasionally observed the so-called amyloid degeneration in the intestinal arterioles and capillaries, especially in the villi of the small intestine and in the submucosa both of the small intestine and of the large. Usually the process had only moderately advanced, the intima of the small arteries alone having undergone the characteristic glassy swelling, while the muscular coat was not yet involved, or at least but slightly implicated."

In addition to the alterations mentioned above, certain changes, such as a peculiar cyst-like transformation of the glands of Lieberkühn, which has been described and figured by Kelsch, are sometimes, the editor says, observed in simple acute inflammations of the intestines, but as they are more frequently found among the turbulent disturbances of diphtheritic dysentery, or the extensive alterations of chronic follicular ulceration of the colon, he postpones the description of them until these conditions come under consideration.

Dr. Woodward includes under the designation of acute dysentery all the various forms of acute alvine flux, whether mild or severe, in which tenesmus is a prominent symptom. Mere intensity in the inflammatory process does not, he says, determine dysentery rather than diarrhœa unless the descending colon and rectum are affected; and, on the other hand, comparatively slight inflammation of the mucous membrane of this region may give rise to dysenteric symptoms. As he lays great stress upon the occurrence in cases of diarrhœa of inflammatory changes in the descending colon and even in the sigmoid flexure, which are sometimes of a high grade, the involvement of the rectum in the inflammation in the catarrhal form of dysentery would appear to constitute in his mind the sole difference between the two diseases. Indeed he says as much. It is consequently unnecessary to give a detailed account of the pathological appearances which were observed by him in the latter condition, as these were, with the exception of the greater frequency of follicular ulceration, identical with those above described.

In the specimens from cases of diphtheritic dysentery which Dr. Woodward examined, the lesions were, of course, of a different character, and consisted principally in the presence of an exudation and sloughs of the mucous membrane. The diphtheritic process varied greatly both as to its extent, the firmness or tenacity of exuded material, and the stage of the process at which death occurred. Sometimes, he says, the exudation was limited to the descending colon and rectum; sometimes it involved other portions of the large intestine or the whole of it; sometimes it extended for a variable distance into the small intestine; sometimes the exudation, or at least some part of it, was quite superficial, lying as a separable layer upon the surface of the mucous membrane, involving only its superficial epithelium, and filling the interior of the follicles of Lieberkühn. Usually, however, in a portion, at least, of the affected cases the adenoid tissue of the mucosa, and often a part or even the whole of the submucosa were also involved. Sloughs of varying depth and extent were of frequent occurrence in those portions of the mucous membrane involved in the diphtheritic process. The membranes presented various degrees of firmness from a jelly-like layer of very slight cohesion, which readily floated away from the affected parts with the intestinal fluids, to a tough, firmly adherent, well-defined layer, which fully deserved to be described as a pseudo-membrane.

To secure a view *in situ* of the membrane, Dr. Woodward says:—

> "The specimen should be immersed in alcohol to be hardened before its surface has been injured by handling, or still better, sections should be prepared by freezing, which will give more correct notions of the quality of the fibrin than can be obtained after the action of alcohol. In such sections the fibrin will be found to vary from a slightly granular material to a characteristic meshwork of distinctly marked fibrillæ. It entangles in its substance a larger or smaller number of lymphoid elements (migrated white blood corpuscles, pus corpuscles), and often scattered or aggregated red blood corpuscles, which are especially prone to accumulate in the portion of the layer nearest the mucous surface. Moreover, low vegetable forms, as will hereafter be more fully described, can always be recognized, at least in the superficial portions of the layer from the first. Not merely does this fibrinous layer form a coating of variable thickness upon the surface of the mucous membrane, but the interior cavities of the glands of Lieberkühn are more or less distended with a similar material. Sometimes this distension takes place uniformly, and the sections appear as if the false membranes were a secretion of these glands, the accumulation on the surface of the mucous membrane being continuous with that in the glandular cavities. In other cases the lower portions of the glands acquire a cyst-like distension, as though inflammatory swelling had obstructed their orifices, and thus determined the accumulation of the abnormal secretion in their lower portions. In these cases the diphtheritic layer on the surface appears to have been formed by transudation from the capillary network of the mucous surface between the orifices of the intestinal glands. These two conditions of the glands are variously commingled, and probably in most cases the diphtheritic layer is derived in part from each of the sources indicated. Besides this surface exudation, sections of intestine in the conditions under consideration exhibit also an increased number of lymphoid elements in the adenoid tissue of the mucosa, in the closed follicles, and in the submucous connective tissue, especially that portion of it which lies nearest to the muscle of Brücke. By the accumulation of these elements in the adenoid tissue of the mucosa the glands of Lieberkühn are pushed abnormally apart to a degree which varies with the intensity and duration of the process. By their accumulation in the closed glands more or less enlargement of these organs results."

The peculiar cyst-like distension of the glands of Lieberkühn to which allusion was made in the preceding quotation is more fully described as follows:—

> "Whether," the author says, "the accumulation of the abnormal secretion in their interiors serves as the stimulus, or this is supplied by the inflammatory condition itself, a genuine hyperplasia of the epithelial lining of the glands results. The glands are not merely distended into bag-like cysts; they shoot out branching buds, which grow into the substance of the adjacent follicles until ultimately several of the glands adjoining each follicle have acquired racemose branches, that lie in the space formerly occupied by the parenchyma of the follicle, the greater portion of which is crowded aside, or an ulcer having been formed floats away as pus, to make room for the new growth. Subsequently the branching tubes often undergo cyst-like distension, and these dilatations, coalescing, may

form cysts of considerable size, $\frac{1}{20}$ to $\frac{1}{4}$ of an inch or more in diameter, but they always retain more or less of the characteristic lining of columnar epithelium which exists in the glands of Lieberkühn."

In severer forms of the disease not only was there a more abundant exudation upon the mucous surface and a denser swarm of lymphoid elements in the adenoid tissue of the mucous membrane and submucous connective tissue, but a delicate granular material, very similar in character to the exudation on the mucous surface, was observed between the new elements, especially in the lymph spaces of the submucous connective tissue. This tissue also appeared to be œdematous, its lymph-spaces being larger than normal, and its stellate connective-tissue corpuscles being more or less replaced by oval nucleated granular cells, which varied from $\frac{1}{2000}$ of an inch or even less, to $\frac{1}{1500}$ or even $\frac{1}{1000}$ of an inch in long diameter, which sometimes adhered to the walls of the lymph-spaces, and sometimes were free in their cavities. The lymph-spaces were occasionally infiltrated by larger or smaller groups of minute granules which were undoubtedly micrococci. The bloodvessels of the affected mucosa, especially the small veins, were engorged with blood, and their walls often infiltrated by the lymphoid swarm. The endothelium of the lymphatic vessels appeared to share in the granular swelling which affected the endothelium of the lymph spaces with which they were continuous. Occasionally they were found distended with fibrin and lymph corpuscles. These changes, however, rarely existed alone. Generally there was also sloughing of the mucous membrane and even of the submucosa. Adhering to the sloughs, bacteriæ and micrococci were found in great abundance, but Dr. Woodward attaches no importance to their presence, as there is no way, in his opinion, by which these bodies can be distinguished from those constantly present in the normal intestinal canal.

The ulcers which were left by the separation of these sloughs varied, of course, in depth. Sometimes only the mucosa was stripped off. More frequently, however, the floor of the ulcer was formed either by some portion of the submucosa layer or by the muscular coat of the intestine. It is not stated whether in any of the specimens submitted to Dr. Woodward actual perforation of the intestine had occurred. When cicatrization has taken place, the cicatricial tissue is, he says, coated with a columnar epithelium, which is probably formed by an outgrowing of the normal epithelium at its margin, but the glandular layer of mucous membrane is never reproduced. Simultaneously with the fibrillated matrix in the granulated tissue by which the ulcer is filled up, a similar matrix is developed between the lymphoid elements that infiltrated these adjoining mucous and submucous layers. The result of this process is the formation of a series of radiating, branching, and anastomosing ridges which often extend one-tenth of an inch, or even farther, from the edge of the ulcer into the secondary mucous membrane, and give rise to a peculiar puckering around the cicatrix (and even to contraction and actual diminution of the lumen of the intestines), which is not often met with in cases of recovery from other forms of ulceration of the bowels.

It will be remembered that Dr. Woodward includes under the designation of chronic dysentery all the chronic fluxes, except those which are due to tubercular ulceration of the intestines. He has adopted this course simply as a matter of convenience, and from a clinical point of view, for he is convinced that an attempt to separate the cases under the heads of, 1, chronic diarrhœa, and 2, chronic dysentery, in accordance with the presence or absence of tenesmus, or of mucus, pus, muco-pus, or blood in the stools, would result in failure, as these symptoms do not always correspond with certain definite lesions. Anatomically, they may be divided into two groups. 1, those resulting from chronic inflammation of the mucous membrane with or without ulceration of the follicles, or of the mucous membrane between them. 2, those characterized by the presence of large ulcers left by the separation of sloughs. Occasionally cases are met with in which both forms of ulceration are present, and occasionally cases in which there has been an exudation of membrane just before death. In the milder cases the post-mortem appearances are so similar to those which have been described as occurring in diarrhœa, and the catarrhal form of acute description, that the editor does not think it necessary to repeat them in full. In chronic cases the mucous membrane is darker in colour than in the acute; the bright-red discolorations observed in the latter being replaced by mahogany-red, brown, green, slate-colour, ash-colour, or other neutral tints of various hues. Black, bluish, or brownish deposits are observed in the closed follicles, or in patches scattered over the mucous membrane of both large and small intestines. Together with these modifications of colour, there is more or less enlargement of the solitary follicles, and more or less thickening of the mucous membrane and submucous connective tissue.

Occasionally small cysts, varying in size from $\frac{1}{16}$ to $\frac{1}{4}$ of an inch in diameter, and containing a thick mucoid or glue-like liquid are found developed beneath the mucous membrane. These are, however, more usually encountered in cases in which follicular ulceration is also present. This lesion is very well shown in an accompanying chromo-lithograph.

Ulceration when present, whether follicular or otherwise, is always most advanced in the large intestine, but it is sometimes met with in the lower part of the small. With this ulceration there is often a high degree of thickening of the tissues so that the colon feels hard and rigid, and is in some instances notably contracted.

"In its earliest stages," Dr. Woodward says, "the follicular ulcer may be recognized by the fact that it is seated at the apex of an enlarged follicle where it appears as a tiny excavation. At a later period the affected gland is entirely destroyed by ulceration, and the ulcer appears as a little cavity in the submucous layer which communicates with the surface by a constricted orifice. Subsequently the ulcer extends to the submucosa, undermining the mucous membrane, which perishes in proportion as its supply of nutritive material is cut off from beneath, and the orifice thus enlarges as well as the ulcer. Still later, adjoining follicular ulcerations often coalesce, forming large irregular excavations by which, in extreme cases, a large portion of the mucous membrane of the colon is destroyed. These ulcers never present the bevelled edges of those which result from diphtheritic sloughing, but always, unless complicated by this latter process, have overhanging edges, from the fact that they spread more rapidly in the submucosa, than in the mucous membrane. Seen from the surface in their earlier stages, the follicular ulcers appear as rounded or oval orifices $\frac{1}{16}$ to $\frac{1}{4}$ of an inch or more in diameter, which look almost as though they had been cut into the thickened intestine by a shoemaker's punch; and the abrupt character is observed also in the larger and more irregular ulcers which are found at a later stage of the process."

The ulceration of the follicles would appear to begin in one of two ways:—

"In the first case the central portion of the little tumour softens, the reticulum of its parenchyma becomes granular, loses its cohesion, liquefies, the lymphoid elements are set free as pus corpuscles, and a small abscess results, which rup-

> tures at its apex, the drop of pus escaping upon the mucous surface, leaves a tiny cavity, which is the follicular ulcer. In the second, ulceration begins at the apex of the enlarged follicle by the formation and separation of a minute slough, or by the liquefaction of the reticulum, and the floating away of the lymphoid elements as pus corpuscles; in this way it invades the follicle from the surface, with the same ultimate result as before. In either case the process continues until the whole follicle is ultimately destroyed.
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> Intestines invaded by follicular ulceration, usually present a certain number ot other ulcers unconnected with the follicles. These appear at first as superficial erosions by which more or less of the thickness of the mucous membrane is destroyed; ultimately, however, they invade the submucous connective tissue. They are generally quite small but sometimes cover a considerable area. These larger ulcers are so similar to those which result from the separation of diphtheritic sloughs, that it is sometimes quite difficult to distinguish between them. There is a curious and by no means frequent variety of the smaller ones, in which they appear as superficial circular erosions around the solitary follicles which remain intact as central eminences."

The formation of these ulcers is usually preceded by an accumulation ot lymphoid elements in the adenoid tissue of the mucous membrane, by which the superficial portions of the glands of Lieberkühn are finally entirely obscured. The columnar epithelium of the mucous membrane then separates and leaves an abraded surface composed almost wholly of lymphoid elements, and resembling in its appearance the surface of a granulating wound. By more or less rapid molecular changes commencing at the surface, the reticulum of the adenoid tissue then liquefies and the lymphoid elements float off free as pus corpuscles. Sometimes the glands of Lieberkühn appear to be entirely destroyed either by molecular changes or by sloughing. In other cases the bases of the glands can still be distinguished beneath the ulcerated surface.

Both forms of colon ulcer may invade the muscular coat, and extending to the peritoneal coat may finally produce perforation with fecal extravasation. Similar ulcers are also found in the lower part of the small intestine. Occasionally distributed over the mucous membrane are peculiar stellate cicatrices which mark the site of former ulcers. These were found in our soldiers by Dr. Woodward not only when opportunity offered, after recovery from chronic fluxes, but also in fatal cases, between the unhealed ulcers. The morbid appearances in chronic dysentery resulting from the ulceration caused by the separation of the sloughs due to diphtheritic exudation, do not differ materially from those seen in the acute form, and are therefore not described in detail.

Dr. Woodward thus describes one of the peculiar cysts referred to above as of frequent occurrence in chronic dysentery:—

> "It was about one-twelfth of an inch in diameter, and lay in the thickened submucosa, pushing the mucous membrane upwards so as to form a convex elevation. In the mucous membrane covering this convex surface, the glands of Lieberkühn lay obliquely compressed against each other, and in some places quite flattened. At one point in this area, the muscle of Brücke was absent, and the contents of the cyst became continuous with the lower portion of the tubular glands of Lieberkühn. The greater portion of the cyst was filled with a substance which, with a power of 200 diameters or upwards appeared faintly granular, and had here and there imbedded in it lymphoid elements like those infiltrating the submucosa or the parenchyma cells of the closed follicles; but in the region surrounding the point at which the cyst-contents became continuous with the lower portion of the glands of Lieberkühn a very characteristic structure was presented. Here instead of the substance just described, dilated and distorted gland tubules imbedded in a soft granular tissue, infiltrated with innumerable lymphoid cells, could readily be distinguished as the chief structural elements. Considerable variation exists with regard to the extent to which the distended gland tubules

can be detected in the cysts. In some of the smaller cysts they are found in all parts of the mass; in the medium-sized and larger ones they can be recognized only in the peripheral portion of the cyst contents, and not always in all parts of this."

An examination of the series of sections prepared from four cases leaves no doubt in his mind, he continues, that these cysts are formed precisely like the smaller ones described in connection with acute dysentery; in fact, in some of the sections various transition forms were observed. He agrees, therefore, with Virchow that the cysts of colitis cystica polyposa result from cyst-like dilatation of the glands of Lieberkühn and the subsequent irregular coalescence of the smaller cysts thus produced, but he also agrees with Cruveilhier that the cysts have their seat in the solitary follicles. "In catarrhal inflammation of the intestinal mucous membrane the softened parenchyma of the swollen solitary follicles offers," he says, "a suitable nidus for the peculiar cyst-like development of the glands of Lieberkühn, which elsewhere is prevented from going beyond a very moderate degree by the resistance offered by the muscle of Brücke; and whether the cystic transformation of the hypertrophic gland tubules proceeds to a moderate or an extreme degree, the parenchyma of the solitary follicles is the site in which the cystic development occurs." The contents of the larger cysts, therefore, are partly the altered parenchyma of the solitary follicles involved; partly the branches of the hypertrophic glands of Lieberkühn which have undergone the cystic change, but chiefly the modified mucous secretion which has accumulated in them. When such cysts rupture and discharge their contents, the cavities left closely resemble ordinary follicular ulcers.

For the sake of avoiding unnecessary repetition, we shall refer as briefly as possible to the complications which were observed in all the forms of flux above described. They were most numerous and severe in chronic dysentery and least so in acute diarrhœa. The duration of the illness would appear to have a determining effect upon the character of the complication as well as upon the frequency of its occurrence. Thus, while acute diseases of the respiratory organs were not unusual in the acute forms of these diseases, diseases of the liver, kidneys, and spleen, and especially abscess of the liver, were almost exclusively met with in the chronic form. Tubercular disease of the lungs seems to have been a frequent complication in all forms, and so were the various morbid conditions engendered by exposure to malarial emanations. After death in a certain number of cases of acute and chronic dysentery effusions were found in the peritoneal, pleural, and pericardial cavities; and in a few of the chronic cases in the subarachnoid space and in the cerebral ventricles. Fibrinous clots were also frequently found in the heart.

During the civil war hepatic abscess was, as compared with its occurrence in tropical countries, not a frequent complication of dysentery. It was met with only 24 times in 661 cases of dysentery of which there are post-mortem records.[1] In 15 cases the abscess was multiple, and in 9

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[1] The much greater frequency of hepatic abscess as a complication of dysentery in tropical countries will be seen in the following summary of the experience of British physicians in India:—

Thus, Ballingall	found	it in	4	out of	35	autopsies.
Annesley	"	"	26	"	56	"
Waring	"	"	69	"	259	"
Eyre	"	"	27	"	118	"
Ranking	"	"	41	"	140	"
Moore	"	"	90	"	494	"

single. In every case but one (in which the abscess was multiple) there was also marked ulceration of the intestine; the disease being acute in 7 cases (3 of single and 4 of multiple abscess), and chronic in 16 cases (6 of single and 10 of multiple abscess). In addition to the above a multiple abscess of the liver was found in a case in which the patient is said to have died of chronic diarrhœa, but in which no evidence of this disease was discovered at the autopsy. The editor thinks that the theory of embolism explains satisfactorily the occurrence of multiple or pyæmic abscesses in the course of dysentery, but in regard to the large single abscess he says: "I incline to believe that the relationship in these cases between the liver abscess and the dysenteric process is similar to that which exists between pneumonia and dysentery, namely, that the conditions which might produce pneumonia or hepatitis in healthy subjects are still more prone to do so in those who are debilitated by a pre-existing flux."

Tubercular ulceration of the bowel, in spite of the fact "that tubercular disease of lungs was noted in nearly one-sixth of all autopsies of fatal cases of the forms of flux heretofore described," would appear to have been of infrequent occurrence among our soldiers, Dr. Woodward being able to find in only twenty of the reports of autopsies collected in this volume positive evidence of its presence. In these cases, with one exception in which the condition of the thoracic viscera is not mentioned, the lungs are also said to have been the seat of tubercular disease. There are, besides, nine cases which may have possibly been examples of this disease, but from the imperfect character of the record or other circumstance all of them are open to doubt. It is probable, however, he says, that in many cases it existed but was not recognized, as the medical officers who made the autopsies were not always skilful pathologists. The distinction was, perhaps, sometimes not made, because the cases did not present any symptom by which, in the existing state of our knowledge, their nature could have been determined in the lifetime of the patient. Indeed, there is every reason to refer the diarrhœa which occurs in this form of disease to the coexisting intestinal catarrh rather than to the tubercular ulceration.

The gross appearances in the specimens of tubercular ulceration of the bowel which the editor examined did not differ materially from those described in the standard text-books. Occasionally the lesions of acute diphtheritic dysentery, which was in some cases the immediate cause of death, were present. Tubercles of the peritoneum and tubercular peritonitis were also found in most of the cases. Perforation of the intestine, and intestinal stricture resulting from partial cicatrization of the ulcers, were not observed in any cases reported during the war.

We shall give the results of Dr. Woodward's microscopical examination in his own words:—

"When," he says, "perpendicular sections are cut through the edges of a tubercular ulcer of the small intestines, and the tissues adjacent, and examined with a power of ten or twenty diameters, the first circumstance which arrests attention is the occurrence of numerous tiny nodules, which are found most abundantly in the immediate vicinity of the ulcer, but also, though in diminishing frequency, at a considerable distance from it, especially in the course of the arterial twigs, that supply the territory occupied by the ulcer, and of the lymphatics that issue from it. These occur either singly as exceedingly minute formations

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Neglecting the figures of Annesley, whose cases were selected to illustrate the subject of hepatitis, the sum of the others will represent the occurrence of hepatic abscess in about one of every five fatal cases of dysentery. The complication is almost as frequent in China and in South America.

$\frac{1}{20}$ to $\frac{1}{100}$ of an inch in diameter, or even smaller, or as compound nodules consisting of three or four to fifty or more of the smaller ones grouped together. . . The central portion of these tubercle-granulations which lie nearest the edges of the ulcer is usually found converted by cheesy metamorphosis into granular debris, and often drops out from the thin sections during the process of preparation, leaving a tiny cavity. Between the tubercles the submucous connective tissue is in a state of chronic inflammation with dilated bloodvessels, and infiltrated by a swarm of lymphoid elements which are most abundant just beneath the muscle of Brücke, and near the edges of the ulcer, as in the case of ordinary catarrhal ulcers. The mucosa also presents the usual phenomena of chronic inflammation; its adenoid tissue is infiltrated with lymphoid elements, by which the glands of Lieberkühn are pushed apart, and its villi are hypertrophied, appearing as cylindrical or clavate forms often several times larger than their normal size. . . . . Studied with a power of 250 to 500 diameters or upwards, these preparations exhibited the following structural details: those of the smallest, presumably the youngest, tubercle granulations in the submucous connective tissue. through the midst of which the sections had fairly passed, presented central figures $\frac{1}{500}$ to $\frac{1}{250}$ of an inch in diameter, or even larger. These, for the most part, were rounded or oval in form, and bounded by a distinctly recognizable external wall, like that of a small vein or lymphatic vessel cut across. The space within this boundary was generally filled with a granular or indistinctly fibrillated material resembling coagulated fibrin, entangling in its substance a number of cells; some resembling endothelial elements and these usually lay in the periphery; others, and these the most numerous, ordinary lymphoid cells. Outside of the limiting wall of the central figure the granulation was made up of two kinds of cells; large, oval, nucleated cells, corresponding in size and form to the swollen endothelial elements seen in chronic inflammations of the submucous connective tissue of the intestine, and a swarm of small round cells resembling ordinary lymphoid elements. . . . . As to the significance of these parts, I incline to interpret, with Virchow, the central figure as a lymphatic vessel cut across, rather than with Cornil and Ranvier as a bloodvessel. If a bloodvessel it must be a small vein, for the walls are much too thin for an artery of the same diameter. But the veins in other parts of the sections show no particular indications of disease, while the lymphatics everywhere exhibit more or less tumefaction of their endothelial elements, which in many places are so swollen as almost or quite to fill the lumina of the vessels, giving rise in all parts of the sections not occupied by the tubercles to characteristic figures filled with large cells more or less polyhedral from mutual pressure. . . . Occasionally such a vessel may be encountered in which a part of the lumen is filled by what appears to be a small fibrin-clot adhering to one side of its wall, entangling in its substance endothelial and lymphoid cells, while similar cells lie free in the remainder. It is easy to understand that some of these figures. if shrunken by the more potent influence of chromic acid hardening instead of being hardened by alcohol alone, would bear a striking resemblance to the descriptions of giant cells. . . . I incline, therefore, to regard the so-called giant cells, in intestinal and peritoneal tubercles, as figures resulting from the action of chromic acid on sections of lymphatic vessels stuffed with coagulated fibrin. The large endothelial elements of the primary tubercle granulation outside its central figure, I suppose to be formed by mere enlargement of the endothelial elements of the lymph-spaces in the connective tissue. If," Dr. Woodward continues, "the foregoing descriptions are substantially correct, the development of the ultimate tubercle granulation would seem to be determined by the formation of a fibrin-clot obstructing a small lymphatic vessel"

The volume contains much less information in regard to the cause of the excessive prevalence of diarrhœa and dysentery in our armies during the war than might reasonably have been expected. Indeed the editor seems to us to make the mistake of quoting more freely from the works of authors, both ancient and modern, who have written on these diseases, than from the reports of those army surgeons who had the best opportunity for determining what forces were in action in producing so large an amount of disease and mortality. The causes of diarrhœa and dysentery may, he says, be divided into two groups: 1. Those which act directly upon the intestinal mucous membrane by irritating or inflaming it; and 2. Those which produce the like result in consequence of their primary action upon some other part, or upon the general constitutional condition of the individual. In the first group he places faulty alimentation, which includes bad drinking water, and unsuitable, insufficient or badly-cooked food. Drinking water may be impure in consequence of admixture with inorganic substances which it holds either in suspension or in solution, or from contamination by organic matters either of vegetable or of animal origin. In regard to water which is simply turbid from the presence of suspended inorganic matters, the editor expresses the opinion that many of the injurious effects which have been attributed to it are purely imaginary, quoting in support of his opinion, the testimony of Drake, who declares in the most unqualified manner that no harm results from the habitual use of the muddy waters of the Missouri or of the Mississippi below its influx by those who live on the banks of these streams. The official publications of the Medical Department of the United States Army, edited by Forry, Coolidge, and Billings are silent as to the injurious effects of drinking the water of muddy rivers, although several of the medical officers in their reports, contained in those works, give instances in which dissolved impurities in the waters of certain rivers, springs, and wells are supposed to have caused diarrhœa. He, therefore, in spite of the fact that strangers after drinking them are often attacked with diarrhœa, does not attribute to them any large share in the production of the fluxes which occurred during the civil war.

The editor believes that the effects of the constant use of water, holding various mineral substances in solution, have also been greatly exaggerated. Most of the mineral waters, especially those containing the salts of soda and potassa, and the limestone waters charged with a considerable excess of sulphate of lime, unquestionably, when first drunk, exercise a decided purgative effect. Indeed, when other causes coexist, they are undoubtedly capable of setting up a serious inflammation of the bowels. But they cease in most cases to purge when habitually used, and it has yet to be shown by statistics that those who are accustomed to drink them are more prone to suffer from diarrhœa or dysentery than others.

In regard to vegetable impurities in drinking water, Dr. Woodward says that he does not hesitate to accept the opinion of Parkes—

> "That we have not, up to the present time, accumulated sufficient evidence to prove that dissolved vegetable impurities ordinarily encountered in drinking water give rise to intestinal fluxes, and that, even in the case of vegetable matter in suspension, the testimony is by no means conclusive; in truth, the opinions hitherto advanced as to the causation of fevers and fluxes by these impurities are to be regarded rather as ingenious conjectures than as sober deductions from well-established facts."

It is admitted, however, that the evidence which appears to connect drinking water, when rendered impure from the presence of decomposing animal matter, whether in suspension or solution, with the production of intestinal fluxes, is of a much more convincing character; but it is by no means so conclusive in Dr. Woodward's opinion as that in favour of attributing typhoid fever to a similar cause. Water, contaminated by the discharges of dysenteric patients, seemed to have been the means in some cases of causing local epidemics of dysentery.

The editor attributes no special influence in the causation of the fluxes to the use of ice water or of alcohol in any form as a beverage. The latter, however, when indulged in to excess, undoubtedly impairs the general health, and thus renders the individual more susceptible to the action of the causes of these diseases.

The use of animal food in which putrefactive changes had occurred is believed by Dr. Woodward to have been an occasional cause of dysentery in our army; on the other hand, he does not seem inclined to attach much weight to the opinion that the disease was often produced by the use of hard bread and beans, a ration which was frequently issued to our troops, except when uncombined with other food in sufficient quantity and variety. Food, which was of good quality, was however often badly cooked. When in this condition, it often provokes digestive derangement, which unquestionably favours the action of the causes of the disease, even if they do not themselves give rise to actual inflammation.

Among the predisposing causes of the fluxes which were oftenest observed among our soldiers may be mentioned exhaustion from fatigue, over-exertion, and loss of sleep; the debility left by other diseases, the constitutional condition induced by the action of malaria, whether manifested by actual malarial fever or as a chronic malarial poisoning and the scorbutic taint. The influence which malaria exerts as a predisposing cause of dysentery would appear to be less powerful among the civil population than among our soldiers during the war. According to the census returns of 1870, the geographical distribution of deaths from intermittent and remittent fevers does not correspond with that of deaths from the fluxes; the mortality from the latter diseases being, on the whole, greater in the northern than in the southern portions of our territory. Exposure to wet and cold, sleeping on the damp ground, the vitiation of the atmosphere by the emanations from decomposing animal matter, have all been assigned by different army surgeons as causes of dysentery. The fact that there is some evidence in favour of the view that drinking water, contaminated by the dejecta, has sometimes been the means by which this disease has been transmitted to others, has already been referred to. In no other way is Dr. Woodward willing to admit that it can ever be communicated from the sick to the well.

Nearly a quarter of the work is devoted to the consideration of the treatment of the various forms of flux. The reader will find the prophylaxis and therapeutics of these diseases fully discussed. Almost every plan of treatment and almost every drug which has ever been prescribed for them are critically noticed. If the editor's management of this portion of the subject is faulty, it is so because, while he overwhelms us with quotations from authors, he gives us very few extracts from the reports of our army surgeons. The fault may, however, be rather in the poverty of the material at his command than in himself. Our review has already outgrown its proposed limits, and we shall therefore be as brief as possible in our notice of this part of the work.

After a few judicious observations in regard to the selection of sites for camps, the prevention of scurvy, the general management of the sick, and other topics of general interest, Dr. Woodward passes on at once to speak of the food and drink which may be allowed to patients suffering from the fluxes. There is no better beverage for them than pure drinking water, and whenever this can be obtained it may be administered almost *ad libitum*. It will generally be preferred cold, but in a few instances the ingestion of cold water appears to provoke pain, and it may then be given slightly warmed. It is of course better that a large quantity should not be swallowed at one time. In many cases, especially in those in which there is much gastric irritability, small pieces of ice allowed to dissolve in the mouth will prove most acceptable. Where the water is impure from any cause, it should be boiled; and if there is suspicion of organic impurities, this operation may be preceded by the addition of permanganate of potash or other oxidizing agents. Beer, ale, and cider should be proscribed. They are all likely to increase the existing irritation of the bowels. On the other hand, wine, brandy, and whiskey, either alone or in the form of wine whey or milk punch, are frequently of service after the violence of the first symptoms has somewhat yielded, or signs of prostration have shown themselves. The popular practice of administering whiskey or brandy, with or without aromatics, at the beginning of an attack of diarrhœa or dysentery is very properly condemned.

In the beginning of an attack of dysentery the patient will crave very little food, and the editor believes it is unnecessary to force it upon him. Later, milk may be given to him with great advantage. Farinaceous articles are, on the contrary, to be withheld in the early stage of the disease. In moderate quantities, and combined with a certain amount of nitrogenous food, they are not contraindicated when this stage is past, and appear to be useful in the chronic fluxes. Fats are to be avoided because they are prone to undergo decomposition, by which the fatty acids are set free in the alimentary canal, where they cannot but exert an unfavourable influence. Broths and soups, especially those made from chicken, or beef, are suitable for administration as early in the course of acute dysentery as the stomach will retain them. In regard to beef-tea and meat extract, Dr. Woodward says that chemical analysis, physiological experiment, and clinical experience, combine to show that neither is the nutritive equivalent of the quantity of the meat from which it is made. It may be conceded, he continues, that both exert a feeble stimulating action; that they favour to some degree the digestive functions, and that they possess slight nutritive properties; but as yet the more thoroughly each of these effects has been investigated, the more trifling it appears to be. He does not attribute to them the injurious effects with which they have been credited by certain authorities, and recommends their use in addition to other nutritive articles, but not to their exclusion. Finely hashed meat has been given with advantage in chronic cases. During convalescence from acute dysentery, oysters, and eggs, either alone or beaten up with wine, may be allowed. A suitable admixture of vegetables and fruits is imperatively demanded in the alimentation of convalescents or patients suffering from chronic dysentery, who present symptoms of scurvy.

Venesection does not appear to have been resorted to in the treatment of a single case during the war. The editor mentions it only to condemn it, and expresses the hope that no reaction in favour of bleeding will ever restore it to a place in the therapeutics of dysentery. Nor is he much less outspoken in his disapproval of local blood-letting by means either of leeches or of cups, believing that if a sufficient quantity of blood is taken in this way to produce a constitutional impression, it would only diminish the natural powers of resistance, and thus add indirectly to the dangers of the disease.

Two remedies, usually classed under the head of emetics, namely, tartar emetic and ipecac., have enjoyed a great reputation in the treatment of dysentery. The first of these remedies Dr. Woodward regards with distrust, in consequence of its tendency to irritate the gastro-intestinal mucous membrane. At the beginning of the war it was frequently given at the recommendation of Surgeon C. S. Tripler, in combination with the saline cathartics, in considerable doses, to produce an emeto-cathartic action, or in smaller doses with a view of increasing the action of the cathartic and of favoring the evacuation of bile, but it was subsequently found that the saline produced all the good effects of the combination, and it was therefore administered alone. Ipecac. should only be used in the early stages of acute dysentery, and then only when it occurs in vigorous patients, or in chronic cases of mild type. It is contraindicated, in the editor's opinion, whenever there is conclusive evidence that extensive intestinal lesions already exist. He has little confidence in small doses frequently repeated, and favours the employment of a single dose of fifteen to thirty grains, according to the vigour of the patient, to be repeated, if deemed necessary, once or at most twice at intervals of twenty-four hours, but he is by no means satisfied, by the evidence hitherto brought forward, that the non-emetic administration of large doses offers any advantages over the old method, which secured also its effects as an evacuant.

Dr. Woodward is evidently disposed to place much more reliance upon purgatives than upon emetics in the management of the fluxes, and among the former he believes that none is more useful than sulphate of soda. This acts not merely as a cathartic but produces a decided increase of the hepatic secretion, a property which it shares, however, with sulphate of potassa, phosphate of soda, and Rochelle salts. He has had less favourable results with rhubarb, castor oil, and calomel than with the salines just mentioned. The purgative if given at all should be given in the early stages of dysentery when its action will be to evacuate noxious matters contained in the alimentary canal, and to increase the secretion of the intestinal mucous membrane, thus relieving the congestion of the bloodvessels. In chronic conditions, however, a purgative will occasionally be useful by washing out the abnormal contents of the intestines.

He disapproves of the use of mercury for the production of its constitutional effects, saying that there is no proof whatever that the percentage of recoveries is greater among those mercurialized than among those treated in other ways. Indeed the general tenor of the evidence is in the opposite direction. The induction of salivation is especially apt to produce disastrous results in scorbutic cases.

The editor has not seen good results of a positive character from either diuretics or diaphoretics. Opium he regards as worse than useless in the acute stages of dysentery. It produces anorexia, nausea, and vomiting, and therefore interferes with the taking of nourishment. If its power of diminishing the peristaltic action of the intestines is carried to the extent of temporarily checking the stools, the fermenting or putrefying matters composing them are retained in contact with the inflamed mucous membrane of the lower bowel, where, he says, they must tend to intensify the inflammatory condition, so as even to transform simple catarrhal processes into diphtheritic dysentery. It must, however, occasionally be given when the pain is severe. When this is the case he recommends that it should be administered under the form of a hypodermic injection of morphia, believing that this method of administering the drug is more efficacious in relieving tenesmus than an enema of laudanum, an opinion in which we venture to say few practitioners will coincide. In certain cases he has found a combination of morphia and extract of hyoscyamus useful: in others, belladonna, or its alkaloid atropia. Chloroform and chloral have both been given for the relief of tenesmus.

Very little importance is attached by the editor to the use of the mineral or vegetable astringents. Indeed, he does not make it very clear to us what remedies he would employ in the treatment of the disease after the violence of the symptoms had been somewhat relieved by the action of a cathartic, and before convalescence had been established. Tannic and gallic acid, alum, sulphate of copper, nitrate of silver, the preparations of zinc, acetate of lead, the astringent salts of iron, the mineral acids, the resins and balsams, oil of turpentine, and camphor, are all condemned or dismissed from consideration with scant praise. Of bismuth he, however, speaks approvingly. It is recommended especially in the treatment of painless diarrhœa after the use of evacuants and of chronic fluxes.

During convalescence the tonic which was found most useful was undoubtedly quinia, especially in cases in which there was reason to suspect a malarial complication. During the acute stage of dysentery it was sometimes given with the happiest results for its antipyretic effects. Iron was sometimes administered in combination with it. The editor speaks also approvingly of nux vomica and its alkaloid, strychnia, and of some of the other vegetable tonics. His experience does not enable him to coincide in the favourable opinion many recent authors have expressed of astringent injections, and it has led him to condemn injections of iodine. Warm applications to the abdomen and rubefacients may sometimes be of service, but he counsels us against the employment of blisters, which may sometimes in scorbutic cases be followed by sloughing of the integuments.

It only remains for us to speak of the manner in which Dr. Woodward has executed his task. It is pleasant to be able to say that it is possible to do this only in terms of praise. We regard the volume as a valuable contribution to the literature of the fluxes; in fact, the most valuable with which we are acquainted. As an evidence of the zeal, industry, and intelligence of its editor, the work is one of which his countrymen may justly feel proud. The book, in addition to numerous diagrams, contains as illustrations a large number of very handsome chromolithographic and photograghic plates; the former, from the skilful pencil of Mr. Hermann Faber, representing the microscopic and macroscopic appearances of the lesions in the intestines produced by diarrhœa and dysentery.

J. H. H.

ART. XVIII.—*A Treatise on Hygiene and Public Health.* Edited by ALBERT H. BUCK, M.D., American Editor of Ziemssen's Cyclopædia of the Practice of Medicine, etc. 2 vols. 8vo., pp. viii. 792, vii. 657. New York: William Wood & Co., 1879.

THE appearance of these two handsomely printed and profusely illustrated volumes, comprising more than fourteen hundred pages, is gratifying evidence of a firm faith that the wonderful growth of popular interest in hygiene and its allied subjects, during the last few years, has stimulated the great body of our medical brethren to a far more profound and extended study of sanitary science. Already Hygiene is regularly taught in seventeen out of the twenty German universities, many of the English colleges give systematic instruction in the subject, and the time seems not far distant when the authorities of our own leading medical schools will realize *practically* as well as theoretically that the medicine of the future will be preventive medicine.

A curious enigma is presented to us at the outset in the label of this work—"Hygiene and Public Health—Buck," since faithful search through its two bulky volumes fails to demonstrate any reason for this implied authorship, except a brief prefatory note of thirteen lines in which Dr. Buck appears as spokesman for the publishers, and a footnote on page 393, of some thirty lines, in reference to his own specialty of diseases of the ear, with minute directions for blowing the nose after bathing. The editor's genius and familiarity with sanitary science are not evident in any part of the work, so that the problem of why it is entitled Buck's Hygiene is one difficult to solve.

The "Introduction" is written by Dr. J. S. Billings, U. S. A., who here criticizes the usual definitions of hygiene as being universally unsatisfactory; that of Prof. Parkes, which is often quoted, viz., that it is "the art of preserving health," being defective in that "it aims to increase and improve as well as to preserve, and the word health is too vague to be of much value in this connection."

> "In its broadest sense the study of hygiene includes the examination of the conditions which affect the generation, development, growth, and decay of individuals, of nations, and of races, being on its scientific side coextensive with biology in its broadest sense, including sociology, rather than with physiology merely, as some writers state."

With his usual conservatism, Dr. Billings puts forth a timely warning against the growing tendency to exaggerate the possibilities of prolonging life and preventing disease, a caution of infinite importance, because at the present day, when the attention of our community is so widely awakened to the vital importance of sanitary precautions of all kinds, any misrepresentation of their actual value will be very apt to lead to popular suspicion and distrust, which most inevitably checks the progress of that correct public opinion upon hygienic subjects which it is the urgent duty of every philanthropic sanitarian to foster and extend.

Making all allowance for this tendency to optimism, Dr. Billings asserts:—

> "The total annual loss of life in this country from causes well known to be preventable is certainly over 100,000 annually. . . . In addition to these unnecessary deaths there are probably one hundred and fifty thousand persons constantly sick in the United States from causes which we have good reason to think are preventable, and we may accept as a basis of calculation that the productive efficiency of the average life in this country falls short of the normal amount by at least thirty per cent."

Under the title of "Causes of Disease" our author enumerates several customary classifications, and indicates his preference for thus dividing them into, 1st, hereditary; 2d, physical or chemical; 3d, organized or vital; 4th, mental or emotional causes. Of these, the third class, as being those most important in public hygiene, receives the chief share of his attention.

Under this head Dr. Billings reviews at some length the so-called germ theory of disease, in regard to which his opinions are of course entitled to profound consideration. He advocates the use of the word "microdemes" (*i. e.*, little living bodies) as a comprehensive term to include the "microzymes" of Burdon Sanderson, the "micrococcus" and "micro-bacteria" of Billroth, the "schizomycetes" of De Bary, the "spaltpilze" of Naegeli and of Cohn, the spores of numerous fungi, etc., many of which at any rate take an active part in producing or promoting the decomposition of organic matter.

Dr. Billings accepts splenic fever (*charbon*, malignant pustule), with its analogue the "infectious pneumo-enteritis" of Prof. Klein, as being caused by the rod-like organisms of Bacillus anthracis; relapsing fever as almost certainly produced by the Spirochaete obermeieri of Cohn; and diphtheria as perhaps caused by another form of Bacillus; but denies that there is any evidence to prove that the microdemes in the contagium of smallpox, scarlatina, and measles can be classed with the schizomycetes or other forms of microphytes. To these latter complaints he considers the explanation afforded by the bioplast or graft theory is especially applicable.

The third important question discussed in this introduction is the jurisprudence of hygiene, in which the difficult problem of how to exercise that despotic power which is absolutely necessary to the efficiency of sanitary measures, without infringing upon the personal freedom and popular sovereignty of our republican institutions, is discussed. Under our system of government the power to establish hygienic regulations of all kinds, such as those compelling the isolation of persons sick with contagious diseases, the abatement of nuisances, the collection of vital statistics, etc., is derived partly from the "right of eminent domain," but chiefly from the "police power," which is defined to be that vested in the Legislature by the Constitution to make, ordain, and establish all manner of wholesome and reasonable laws, statutes, and ordinances, either with penalties or without, not repugnant to the Constitution, as they shall judge to be for the good and welfare of the Commonwealth and of the subjects of the same. This section is replete with valuable suggestions and profound research, being eminently worthy of careful study by every American sanitarian.

The second topic considered is that of "Infant Hygiene," justly selected as preliminary to an account of the sanitary management required by fully-developed man, and is treated of by Prof. Jacobi, of New York. It constitutes the initial chapter of Part I., which is devoted to individual hygiene. In it are ably discussed the care of the respiration and circulation of the newly born; infant feeding; selection of a wet-nurse; animal and vegetable substitutes for breast milk; dietetic causes of constipation, and so forth. With these appropriate disquisitions, however, are associated dissertations upon the anatomy and changes of the umbilical cord; the treatment of the normal and pathological conditions of the cord; upon lancing the gums; upon intestinal digestion, etc., which appear out of place in a treatise on hygiene. Indeed the author states that the material employed in this article had already been largely used as part of Gerhardt's "Handbook of Children's Diseases."

The third section, upon "Food and Drink," by Prof. James Tyson, of the University of Pennsylvania, is marked by the accuracy and painstaking research which characterize all his writings. Dr. Tyson's special studies have, however (perchance quite unconsciously to himself), rendered many portions of this essay better suited to a system of physiology or one of pathology than to a work on hygiene and public health.

Prof. Wm. Ripley Nichols, of the Institute of Technology, Boston, contributes the section, upon "Drinking Water and Public Water Supplies," which contains much valuable information respecting the sources, modes of transportation, purification, etc., of our stores of water. At the same time his article affords a lamentable illustration of how unwise non-medical observers are when they attempt to decide upon purely medical questions. Probably no one fact in sanitary science is more certain, or more important in all its bearings, than that the poisons of some very fatal diseases (typhoid fever and cholera for example) are disseminated by means of drinking water. Neglect of proper precautions against sewage contamination doubtless costs thousands of lives and tens of thousands of cases of lingering illness in the United States alone; nevertheless, we find Dr. Nichols sanctioning carelessness in this respect by the following tepid caution, "With all due allowance for imperfect observation and for prejudiced observers, it seems that at present the weight of evidence and of authority favours the idea that the drinking water may become the cause of disease, and in drinking a polluted water one always runs more or less risk." Such lukewarmness upon a fundamental doctrine enfeebles the teaching of his whole essay, for why should so much money, time, and trouble be expended in procuring pure water if hygienic authorities only "favour the idea" that polluted drinking fluids are the causes of disease?

Perhaps, we are not yet prepared to adopt the recent dictum of an English engineer, that "for every death from typhoid fever *somebody* ought to be hung;" but the year in which it does become law will, we fear, behold a terrible mortality among disciples of Prof. Nichols.

Dr. A. Brayton Ball, of New York City, gives in the next chapter, upon "Physical Exercise," a good compilation from the works of Parkes, E. Smith, Maclaren, Schaible, and others, in regard to muscular movement and muscular training; and a useful and instructive paper upon "The Care of the Person," by Dr. A. Van Harlingen, of Philadelphia, concludes the section of Individual Hygiene.

Under the head of "Habitations," comprising Part II., we find an original, able, and well-written article upon "Soil and Water" from the pen of Dr. W. H. Ford, whose ample experience as President of the Philadelphia Board of Health renders his opinions upon practical matters in this department of immense value. It is followed by an excellent essay upon "The Atmosphere," by Dr. D. F. Lincoln, of Boston, Mass.; and the final chapter of volume first by Dr. Francis H. Brown, of Boston, treats of the "General Principles of Hospital Construction," and merits the same praise.

The second volume opens with an essay upon the "Hygiene of Occupation," by Roger S. Tracy, M.D., of New York, which of all the sections displays the most glaring discrepancy between the *promise* that this work should be "written with special reference to the different climates, conditions of soil, habitations, modes of life, and laws of the United States," and its actual performance. So thoroughly exotic in its character is this article that we think it will be found almost indispensable to any American or English hygienist who, without a knowledge of the German tongue, may undertake to practise sanitary science on the Continent. For example, on a single page (p. 44) one will find that the fragments of bristles inhaled by brushmakers cause great irritation of the bronchi. "As will be seen by the table annexed, Hirt gives the very high percentage of 49.1 deaths by phthisis among brushmakers." A dozen lines further on they are told that "Hirt refers to English and Gussenbauer as describing a peculiar affection of the bones in buttonmakers exposed to mother-of-pearl dust," but at the end of the paragraph we discover that "Hirt adds that he has never seen a case himself, although he made inquiries about it in many button factories." Two lines below again, the inquiring reader learns "According to Hirt the work [of making feather ornaments] can be carried on by any one person for only three years at the farthest without great impairment of the health," and at the end of this page we are told that "The female spinners in woollen mills are said by Hirt to be pale and thin, weary looking, lazy, and drowsy." Facts, theories, and conclusions are thus borrowed from Prof. Hirt in the most liberal manner, and yet in his bibliography Dr. Tracy unkindly places Hirt's "Die Krankheiten der Arbiter" at the very bottom of his list of general works.

The section on the "Hygiene of Camps," by Charles Smart, M.B., Asst. Surgeon U. S. Army, although written by a foreigner, is distinctively American, and as such goes far to redeem the promise of the "editor's note." Indeed this chapter, with the similarly able and elaborate one upon "Hygiene of Naval and Merchant Marine" from the scholarly pen of Dr. Thomas J. Turner, Medical Director U. S. Navy, renders the volume almost indispensable to medical officers in the United States service. Nowhere else can so full, intelligent, and instructive a commentary upon the government regulations now in force in regard to the health of our sailors and soldiers be obtained.

Short articles upon the "Hygiene of Coal and Metal Mines" are followed by essays upon "Infant Mortality," and "Vital Statistics," by Thomas B. Curtis, M.D., of Boston. Under the former of these titles a certain amount of repetition of facts and conclusions previously mentioned in Prof. Jacobi's essay upon Infant Hygiene is observable, but will doubtless be pardoned in view of the importance of the subject. Dr. Curtis's paper upon Vital Statistics, without displaying any marked originality, furnishes a lucid exposition of the principles and their application, which constitute this foundation of all true sanitary science. Among other abundant quotations we meet of course with the well-known and picturesque description of the march of an English generation through life (p. 330) drawn up by Dr. Farr for the Registrar General's Report of Great Britain.

Mr. Stephen P. Sharples, of Boston, furnishes the next essay upon the "Adulteration of Food," which contains a good *resumé* of most of the sophistications of articles of diet, from which, however, the traditional nutmeg seems to have been unaccountably omitted. The detection of oleomargarine in butter is stated to be difficult, and chief reliance is placed upon the determination of the amount of insoluble fatty acids in a suspected sample; the process for ascertaining these is, however, imperfectly described. In detecting the adulteration of milk, it is judiciously advised to compare the results from the four different methods of determining, first, the total solids; second, the non-fatty solids; third, the sugar; and fourth, the specific gravity.

Dr. Roger S. Tracy's second article, which is upon "Public Nuisances," proves much more appropriate to the proposed scope of the work than his essay upon "Hygiene of Occupation," previously mentioned. This section, unlike the other, appears to have been written after a fair amount of personal observation and consideration in regard to its subject matter, comparisons and illustrations from European authorities occupying a subordinate position, instead of constituting both warp and woof of the fabric. Nuisances arising from offensive trades, such as keeping of animals, killing of animals, storage, and handling of animal, vegetable, and mineral matters; those from carpet-cleaning, *street music*, etc.; those from chemical, and other like processes; those from human and animal remains, and excreta; nuisances on account of infectiousness (under which are curiously grouped "cemeteries, prostitutes, and diseased animals"), and those on account of noise, smoke, etc., are, with their dangers and their remedies, more or less satisfactorily described.

Under the head of *noise* as a public nuisance, mention is made of church bells and chimes, but the subject is passed over without even a hint that this form of nuisance has ever been the subject of judicial decision. In this connection reference should have been made to the recent suit to restrain the ringing of the chimes of St. Mark's Church in Philadelphia. This case is eminently worthy of mention, not only because it is the first and only case of the kind judicially decided in this country, but also because it is a practical illustration of the precious legal support we may hope for in applying that broad general principle contained in the maxim, *sic utere tuo, ut alienum non lædas*, justly laid down by Dr. Billings, on p. 38 of vol. i., as a chief foundation of sanitary jurisprudence.

From a careful review of the elaborate testimony presented in the St. Mark's case, the Court found "that from the level at which the bells of St. Mark's are hung, and from their proximity to the surrounding buildings, and it may be from other circumstances which are not accurately known or determined, they cannot be chimed or rung without causing an annoyance to the dwellers in the neighborhood, which, in the case of some of them, amounts to a serious injury, and should consequently be abated by an injunction." The case was appealed to the Supreme Court, and the decree was affirmed with a slight modification, which was in accordance with a recommendation contained in the opinion of the lower Court, by which the bells are allowed to be chimed for five minutes on Sundays, beginning thirty minutes before the late morning, the afternoon, and early evening services, and the smallest bell to be tolled for the five minutes immediately preceding these services.

In establishing the law of nuisance from noise, this case has great importance, as has also a more recent English case, likewise unnoticed by Dr. Tracy, in which the defendant, a confectioner, had fixed in the brickwork of his rear wall two large mortars, in which were worked heavy iron pestles. This wall also formed the boundary wall of the garden behind the plaintiff's house. These pestles and mortars had been in constant use for upwards of twenty years. The plaintiff, a well-known London physician, having lately built out a consulting-room abutting on the boundary wall of his garden, found the noise and vibration in the room caused by the use of the pestles so great, that he brought this action to restrain the nuisance. The Master of the Rolls held that the easement or right claimed by the defendant was not one which could be acquired under the statute, or by prescription, and granted an injunction. The defendant appealed, but their Lordships dismissed the appeal with costs. (*Medical News*, Oct. 1879, p. 159.)

The long and varied experience of Prof. S. Oakley Vanderpoel, of New York City, worthily bears fruit in the next article upon "Sea-port Quarantine," which should be carefully perused and pondered by every sanitarian. As remarked by our author, "we should bring to the consideration of the subjects connected with quarantine the same principles of action which govern one in the daily affairs of life; determine, first, every possible circumstance connected with the incubation and mode of propagation of an epidemic, and contravene it by measures specially adapted to the special form of disease." Dr. Vanderpoel recognizes smallpox, ship-fever, yellow fever, and cholera, as being subject to control by quarantine regulations, and gives minute practical directions for inspection, disinfection of persons and goods, and subsequent purification of vessels, etc., which we believe, if fully and generally carried out, would enable communities to protect themselves against incursions of these diseases, with the same kind of certainty with which we, as individuals, may escape being crushed, by stepping aside from the track of a locomotive, or may avoid becoming infected with syphilis, by abstaining from all contact with a syphilitic sore.

The paper on "Inland Quarantine," by S. S. Herrick, M.D., Secretary of the Louisiana State Board of Health, is chiefly made up of facts and deductions relating to the yellow fever epidemic of 1878. Its author wisely advocates extension of the principles of sea-port quarantine to inland intercourse, and makes numerous valuable suggestions towards carrying out this desirable object.

The remainder of the volume is taken up with short articles on the "Hygiene of Smallpox and other Contagious Diseases," "Disinfectants," "Village Sanitary Associations," and "School Hygiene." J. G. R.

ART. XIX.—*Chirurgie Oculaire.* Par L. DE WECKER. Leçons recueillies et rédigées par le Dr. Masselon. pp. 419. Paris, 1879.
Surgery of the Eye. By L. DE WECKER.

THIS volume is intended as a companion to the *Therapeutique Oculaire* published in 1878, and the two are designed to form a complete course of clinical lectures on the medical and surgical treatment of all diseases to which the eye is liable.

The work before us is worthy of attention and study, because it records the results of operative treatment in eye diseases by an industrious labourer through a long and busy career. And not only so, but, in a certain measure, it may be said to represent the progress of this branch of surgery during the last twenty years. De Wecker is what in business affairs is called an enterprising man. He is fertile of new ideas, and modifications of old ones, and is quick to seize upon the inventions and discoveries of others. He seems never satisfied to stand still; "excelsior" is his motto. No new method of treatment is brought forward by others or himself, but he seeks to improve it. It is no matter for wonder that he does not always succeed, but both his successes and his failures are of value to his contemporaries and those that come after him. They go to make up the history of the surgery of the generation, and should be faithfully recorded. To point out where he appears to have succeeded, and where he seems to have failed, and to give as nearly as possible the commonly accepted views on some of the principal points in ophthalmic surgery is the object of the present review.

The operations are considered according to the anatomical divisions of the eye, and the first section is devoted to operations on the crystalline lens. The operation for cataract naturally occupies more of the attention of the European surgeon than of the American, since cataract is of much more frequent occurrence in that country than in this. De Wecker claims a yearly average of 250 operations.

De Wecker contends that the two essential conditions for success in cataract extraction are *cleanliness* of the wound and a *perfect coaptation* of its lips. To accomplish these two ends, all the efforts of the surgeon should be bent, and it has been to attain one or both that all modifications of the operation of extraction have been made. Though the combined operation of Gräfe was devised with the avowed purpose of lessening the chances of iritis, Wecker declares that the principal advantage of the iridectomy is that by this means the wound can be more easily and thoroughly cleaned. For the same reason he insists on a large incision, and asserts that all the earlier operators whose names have come down to us associated with anything like success in this operation, as Richter, Wenzel, Beer, have acknowledged this as a fundamental principle.

The position of Wecker in regard to iridectomy in cataract extractions has undergone modification with time. Once (and it was but a few years ago) he claimed that the æsthetic taste of the people of the centre of fashion in which he laboured demanded that the eye should not be disfigured by a coloboma, and this, aside from any purely surgical motives, had driven him to search for an operation which would not leave a condition so offensive to the critical eyes of his fastidious patients. The ophthalmologists of other countries have, no doubt, smiled at the frankness with which Wecker announced the motives that led him on his path of investigation, but if he has thereby been able to settle any disputed point, we should be grateful. And it must be said that the same frankness and honesty have prompted him to give us a fair statement of the results of this new departure—results from which the surgical world may draw important lessons.

There can be no question among surgeons that if an operation can be successfully performed without an iridectomy the result is much more satisfactory than when an iridectomy is done. Mauthner asserts that, optically, an iridectomy is always bad, and that in some cases V. is only half what it would be if no iridectomy were done. And those who remember back to the time when the old flap method was in vogue, tell us that when that operation was successful, it was more successful than the successful ones under the combined method. Wecker has tried both methods, and tried them extensively, and his summing up of the matter is, that in the majority, perhaps, of cases, the simple method, uncombined with an iridectomy, is the better. Where the pupil is active, the tension normal, and the patient and eye in all respects healthy, he spares the iris. In the exceptional cases, particularly when there is any abnormal increase of tension, he gives preference to an iridectomy, though an iridectomy of a kind different from the traditional one of von Gräfe, and of which we shall speak further on. He makes, therefore, the simple operation (as he terms it) the rule, the combined method the exception, and confined to cases with special indications. He recognizes the danger from an entanglement of the iris in the corneal wound in the simple method, and frankly says that he sometimes sees his patients return after a time with glaucoma. This is supposed to be an argument in favour of his filtration theory of glaucoma. But he quotes from Becker, that in the large majority of cases where an iridectomy is done, the iris is not cut close to its origin, and a small portion remains which must apply itself against the posterior surface of the cornea. Brailey, of London, who has made a very large number of examinations of enucleated eyes on which iridectomy had been performed, corroborates this statement. It would seem then that the "filtration way" is impeded quite as much when an iridectomy is done as when not, and we must seek for some explanation of the glaucomatous symptoms other than an obstruction of the "filtration way."

Hence, prolapsus of the iris, when viewed from this standpoint, ceases to be an important objection to the "simple method." As has been said, Gräfe combined an iridectomy with extraction for the express purpose of lessening the chances of iritis, but as Wecker very pertinently remarks, in order to avoid inflammatory reaction he makes *two* wounds instead of one, which would seem to be illogical. Whether or not iritis is of more common occurrence without an iridectomy can be proven only by statistics. It used to be thought that the iris was more intolerant of contusions than of clean incisions, but it hardly seems probable that a simple stretching of the sphincter without a solution of continuity can be so liable to call forth reaction as a wound however carefully and smoothly made. And again, there are others, prominent among whom is Knapp, who believe that the reactive processes begin in a large number of cases in the capsule, and acting on this principle have endeavoured to avoid injuring the capsule to any great extent by making a peripheral capsulotomy, thus giving, as they claim, a readier exit to the lens, and allowing the wound in the capsule to heal, by first intention, as it were. This method of peripheral capsulotomy first used by Grüning in Morgagnian cataract, and now applied by Knapp to all cataracts, has met with decided favour with operators, and bids fair to be generally accepted by those who still cling to the combined method. It is, of course, not applicable to the "simple method," because the iris will stand in the way of getting at the equator of the lens with the cystitome. It is well known that the chief danger to be feared in the old flap method was suppuration of the cornea. This was due to the large extent of the wound and its position so far from the supply of nutrition, and has been remedied by a more peripheral situation of the incision, and now that which the operator has most to fear is iritis. These two sources of failure are seldom if ever united in the same eye. I remember hearing Critchett remark on this point, that when he was compelled to operate on both eyes at once he always did a "Gräfe" on one and a "Brussells" (Le Brun's method, analogous to Liebreich's, only with the incision made upward instead of downward, and there is no iridectomy) on the other. He felt sure, he said, by this method of saving one eye at least, because his experience had taught him that the liability to iritis and sloughing of the cornea were seldom found in the same individual; and that, as the chief danger in the Gräfe was iritis, and in the Brussells suppuration, by doing both an almost certain good result could be counted on for one eye or the other. Wecker claims that occlusions of the pupil by his method have been only 2.45 per cent., while in his hands the Gräfe method has yielded 4.27 per cent. As to general results, Wecker claims for his methods 92 to 93 per cent. of complete successes, 4 to 5 per cent. incomplete successes, and 2 to 3 per cent. failures. He cites some statistics of Zehender as to the percentages in the operation of Gräfe. There are 85 per cent. complete successes, 10 per cent. incomplete, and 5 per cent. failure.

The percentages of the old flap method were 80 complete successes, 13 incomplete, and 7 failures. These are European statistics.

The statistics of operations in America are not so good. The reason for this it would be as difficult to assign, as for the comparatively smaller number of cases. It can hardly be accounted for by want of skill, for Knapp, who has operated in both countries, finds his percentage of success less here than when in Heidelberg.

Dr. C. R. Agnew has recently reported 132 operations after the Gräfe method, with $81\frac{27}{33}$ per cent. of complete successes, $9\frac{28}{33}$ per cent. of incomplete, and $8\frac{11}{33}$ per cent. of failures. If statistics are to be relied upon (which, unfortunately, they are not in all cases), Wecker's method would seem to offer the best results of any, while American operations, by the most improved plans, are but little better than the old flap.

The most important modification for which Wecker contends, is the position of the incision. He says Gräfe claimed that the essential part of his method was the linearity of the wound, and gives, in proof, a letter he received from Gräfe on this point some time before the latter's death. Wecker contends that all that is now left of the Gräfe operation is the knife. That the situation of the incision has been to some extent modified by those who have followed Gräfe's teachings, is undoubtedly true. Few, if any, operators now place the incision so peripherally as Gräfe did. There has been a constantly increasing tendency to shift it more into the cornea, and remove it from the dangerous ciliary region.

.Wecker abandons the idea of linearity altogether as absolutely unessential. The periphericity he still holds to, in so far as he wishes to bring the wound as close to the nutrition supply as he can, in order to insure as prompt healing of the wound as possible. To accomplish this a small flap is necessary. He has experimented, if the word is allowable, with flaps of 2, 3, and 4 mm., and as the outcome of his experience has adopted the flaps of 3 and 4 mm. as those offering the greatest advantages for the two operations he now performs—the "simple peripheral flap," and the "combined peripheral flap."

At first he thought to apply the "simple flap" to all cases, hoping to prevent *enclavement* of the iris by the energetic use of sulphate of eserine. He recognized in this tendency to prolapsus of the iris, due to the periphericity of the wound, the weak point in the operation, for even in a flap of 4 mm., if there was any increased tension, a prolapsus was not to be avoided. He, therefore, reserved this operation for the simple, uncomplicated cases, and does it in the following manner :—

An assistant holds the upper lid up, or a small speculum is used which the assistant holds away from the globe, so as to avoid any pressure. The ball is then held by means of fixation forceps, and the cornea detached at its junction with the sclera for its lower third, forming a flap about 4 mm. in height. The knife used is one about double the width of Gräfe's. After the counter-puncture is made, the fixation forceps are removed and the section completed without the formation of a conjunctival flap. The speculum is then removed, and the lids covered with a cold sponge and the patient allowed to rest a moment. The capsule is then opened by means of an ordinary cystitome. The lens is then expelled by pressure by means of the lid and a spatula at the border of the wound. The eye is then cleared of corticalis, no regard being paid to the prolapsus of the iris. If the iris does not re-enter the ant. chamber it is gently pushed in by means of a little spatula. Two or three drops of eserine are then instilled;

and, after waiting for five minutes for the action of the myotic, the eye is bandaged if the pupil is found to be contracted and there is no enclavement of the iris. The bandage is removed at the end of two hours for a reinstillation of eserine, if the pupil is not found well contracted at the second examination.

For cataracts not included in the above category, that is where the eye has a somewhat increased tension and the cataract is either not sufficiently or hyper-mature, and he has reason to fear an imperfect evacuation of the corticalis, he does the *combined peripheral flap*. The following are the steps of this operation: The lids are held apart by a small speculum whose handle rests against the nose. The ball being fixed, a Gräfe's knife is entered at a point 3 mm. below the summit of the cornea, this position being found by laying the knife, which is 2 mm. broad, on the cornea and allowing 1 mm. of clear cornea to remain above it. The knife is entered vertically, and then pushed very slowly across the ant. chamber in a plane parallel to that of the iris, and the counter-puncture made at a point corresponding to the point of puncture on the other side. The handle of the knife is then depressed and advanced so as to direct the point toward the junction of the nose and forehead, and withdrawn with an opposite movement upward. The section is thus completed by two strokes of the knife as it were, and the wound is more regular than in the see-saw movement. If the iris does not prolapse, it is drawn out and cut in the direction of its radial fibres by means of the forceps-scissors. The result of such a section of the iris is that the artificial pupil has its apex at the periphery instead of at the pupillary margin, as is the case in the iridectomies made by sections which follow the base of the iris around the globe. If the prolapsus of the iris is large and a single section does not free the wound, two cuts are made with the scissors, both still radiating and not going quite up to the periphery. The operator then takes the fixation forceps from the assistant, and the latter holds up the speculum. The capsule is then incised in the ordinary way, and the lens expelled by pressure on the lower part of the cornea by means of a spatula. After the expulsion of the lens a drop of a solution of eserine (5 centig. to 10 gm.) is instilled, and the lids sponged with a weak solution of carbolic acid. The corticalis remaining behind is then expelled by rubbing with the lower lid, the wound is cleaned, and the eye is then bandaged.

Such are the operations which Wecker offers to the profession as the outcome of a large experience and much thought, and it must be confessed that on paper they appear well. No other operator has, so far as our knowledge goes, published such results. But conceding all he claims, there yet remains that crucial test of all newly devised procedures—its trial in the hands of others; and, so far as we know, no one has published any results with Wecker's operations besides himself. That, however, could scarcely, in fairness, be used as an argument against it. The methods are comparatively new, and most operators are wedded more or less closely to the Gräfe method, and in the interests of their patients should not change. Even if the Wecker method were superior to the Gräfe, one who was expert in the latter operation would be more successful with it than with the Wecker, at least until he had acquired the same skill with it, and in the mean time his patients must suffer. It is to the rising generation of operators, then, that we must look for a just valuation of new methods; and ten years more experience will no doubt determine the exact status of this operation as compared with others.

Very full descriptions of all the other recognized methods of operating are given. The remarks on after-treatment are very judicious and practical. He can see no advantage from any confinement to the bed after the third or fourth day, and always allows the patient to set up on the second day after the operation. By this time union of the wound has taken place, and further confinement can only be irksome to the patient, as indeed we would naturally expect in those who are in perfect health, as cataract patients usually are. Wecker relates that during his vacation at Biarritz he has frequently operated on patients and sent them immediately to their homes 15 to 20 kilometres distant, and has observed no ill results from it. The use of antiseptics during and after the operation he strongly commends, and has no doubt that they increase the percentage of success.

We have devoted so much attention to the operation for cataract extraction, because it is the capital operation in ophthalmology, and because the experience of the largest operator in Europe, who has tried all methods, is eminently worthy of close and serious attention and study.

The next class of operations which Wecker considers are those practised on the iris; and, as would be natural, he considers that of *iritomy* first. We say naturally, because it is one of those operations which Wecker has revived, and with which his name will always be linked. As this operation has been before the profession since 1873, we do not propose to give a description of the method by which it is done. It has found favour with perhaps a larger part of oculists, and by some is considered a "triumph of surgery." The forceps-scissors first brought into use and notice in connection with this operation has also obtained a rather extensive use outside of it, and in the hands of some has to a large extent replaced the straight scissors in iridectomies, etc. Among the modifications which Wecker has made more recently is the irito-ectomy, in which a piece of the iris is cut out and removed from the eye. This operation is applied only to those eyes where, from a loss of elasticity of the iris tissue or where the iris is bound down by inflammatory exudation to the capsule, no retraction can take place after the incision is made.

The portion devoted to *iridectomy* is full, clear, and practical, but there is nothing that is especially new to which we would call attention. In common with many others he uses always a Gräfe knife in making the incision; and the advantages of this knife over the old lance-shaped one are undoubtedly great, particularly in cases like glaucoma, where the ant. chamber is narrow and we wish to avoid injury to the capsule.

Another operative procedure reintroduced by Wecker is that of *tattooing the cornea*, principally for cosmetic purposes. In a footnote he notices the statement made by Abadie, in his recent treatise on the eye, that it was he who first suggested to Wecker the idea of tattooing. It is the old question of whether the right of priority shall be granted to the suggestor or applier of an idea.

His method of making an *ablation of a staphyloma* is to detach the conjunctiva from the sclera at the base of the cornea. Sutures are then introduced vertically through the conjunctival edges, each being of a different colour in order to avoid mistakes in tying. These are then moved carefully to one side, and the staphyloma cut away. The conjunctiva is then brought over the opening in the ball by means of the sutures. Wecker contends that in this manner the danger from the passage of the sutures so near the ciliary region, as in Critchett's method, is avoided.

Abrasion of the conjunctiva is an operation which he frequently performs for pannus. A narrow strip of the conjunctiva is removed at the base of the cornea. The blood supply of the vessels in the cornea is thus cut off, and they of course perish, though the full effect is not noted until cicatrization has taken place.

In operations practised on the sclerotic, *sclerotomy* occupies the first position. This operation was also revived by Wecker, but with such modifications as to be justly considered a new procedure, though both Mackenzie and Hancock made punctures in the sclera for glaucoma. Wecker was at one time the most ardent advocate of the operation, but recently Mauthner has become its most enthusiastic champion; so much so that Wecker gives up the greater part of this section to quotations from this author as to the indications and methods of operating. As we have already given attention to the views of these two gentlemen on this subject in this Journal,[1] we have only to add that further experience has not diminished its value in Wecker's eyes.

Drainage of the eye by means of gold thread is an operation which Wecker developed *de novo*. It was intended to be applied to cases of chronic glaucoma, detachment of the retina, and hydrophthalmus, in fact, to all cases where a constant and increased outlet was desired for the intra-ocular fluids. Experience has shown, however, that the sometimes rather brilliant results are not lasting, and the dangers, though not as great as we should *à priori* expect, are yet sufficiently so to warrant the opinion that it will fall into disuse except in very rare cases.

Sections of the *ciliary* and *optic nerves*, especially in cases of threatened sympathetic ophthalmia, are considered. So long as it remains a mooted question whether the "sympathy" is transmitted from the diseased to the healthy eye by the ciliary nerves or the optic nerve, no conscientious practitioner can fail to give his patient the benefit of the doubt, and enucleate the primarily affected eye. Wecker evidently thinks the English and American operators are rather too free with the operation of enucleation. Among 800 or 900 operations a year at his clinic he has only from 10 to 15 enucleations. It would, we think, not be overreaching the mark to say that among the same number of operations in England or America the number of enucleations would be at least double. Mauthner has recently devoted one of his "Lectures" to this subject, and inveighs strongly against what he considers an abuse of the operation. As in all questions of this nature there are of course two sides, and where an eye still retains some visual power, however slight, sound judgment is required in deciding the course to pursue. But when the offending eye is lost, and the patient is not intelligent nor observant, and particularly when he is beyond the immediate reach of a competent surgeon, there is, it seems to us, no middle ground—the eye should be enucleated at once.

The section on the *operations on the muscles* is clear and very practical. In the divisions of the internal rectus he uses the method of Gräfe and regulates the result by means of sutures. He never completely corrects a strabismus in the young. If, for instance, in a child of 10 years there is a convergent squint of 5 mm., he corrects it to 2 mm., and trusts to time and development to overcome this. A full account is also given of his operation for the advancement of the internal rectus.

The various operations for the treatment of *malpositions of the lids* are described. His own recently devised method of treating trichiasis is as follows:—

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[1] Amer. Journ. Med. Sci., April, 1879, p. 474. See, also, *Medical News and Abstract*, Jan. 1880, page 37.

The first step is to enlarge the palpebral opening by means of a division of the outer canthus. A compression-forceps is then applied and the lid is split between the ciliary and the glandular border. The integument and muscle are then dissected up for 5 or 6 mm. Three or four sutures are then applied 8 or 10 mm. apart in the following manner: They are entered between the brow and the detached ciliary border, and passed over that portion of the tarsus that is not denuded to finally pass out near the implantation of the cilia. They are then tied tightly, and allowed to ulcerate out, or are removed in the course of five or six days.

In conclusion we will notice that in treatment of stricture of the nasal duct, Wecker recommends the utmost care and delicacy in handling. He is sure that often more damage is done by rough treatment than if the disease were left to itself. He is strongly opposed, in simple lachrymations, to the use of large sounds and so-called stricturotomy. The slitting up of the canaliculus to the caruncle in any cases, except those of suppuration of the sac, he strongly deprecates. When there is nothing but simple watering he usually introduced a Weber's knife into the lower canaliculus, until the probe-point touches the bony wall of the sac. This is usually sufficient to enlarge the punctum sufficiently to allow the introduction of a probe the size of No. 3 of Bowman, a larger probe than which he seldom uses. In cases of abscess of the sac he generally lays open the upper canaliculus in order that the pus can have a free exit, and that astringents may be applied.

The book is written in a charming style, and the statements are clear and never to be misunderstood. Upon all points in connection with the surgery of the eye, Wecker has decided opinions, and does not hesitate to express them. One great virtue of the book is that the author never forgets that he is teaching, and never loses sight for a moment of the fact that he should be practical in the best sense of that term. One does not always agree with him perhaps, but one cannot help feeling that he is a man who has by his devotion to his chosen science earned a right to his opinions. S. M. B.

ART. XX.—*The Pathology and Treatment of Venereal Diseases.* By FREEMAN J. BUMSTEAD, M.D., LL.D., late Professor of Venereal Diseases at the College of Physicians and Surgeons, New York, etc. etc. Fourth edition, revised, enlarged, and in great part rewritten by the author and by ROBERT W. TAYLOR, A.M., M.D., Professor of Skin Diseases in the University of Vermont, Attending Surgeon to Charity Hospital, etc. etc. With one hundred and thirty-eight woodcuts. 8vo. pp. 835. Philadelphia: Henry C. Lea, 1879.

THE first edition of this familiar work, issued in 1861, commanded a success which was the fruit not only of its intrinsic excellence but of its timeliness. It was presented to the profession of this country before the time of that remarkable awakening of interest in venereal studies, to which the book itself in large part contributed. At a date when the subject had been largely relegated to the great teachers of surgery in

America, who for the most part, it may be said, viewed it from the standpoint of so-called unicism, this treatise, written in a remarkably lucid and pleasant style, attracted universal attention to the doctrines of the two men, who were then the rising and setting suns of French Syphilography. The book thus attained a popularity among medical men, the like of which can scarcely be realized a second time, either by itself or its competitors, from the lack of the peculiar timeliness which has been already mentioned. In brief, the work became the oracle, in its special field, for many who read its pages with an interest which was only equalled by their delight. Nor was this true only of professional gentlemen. Venereal patients in the *clientèle* of the general practitioner, purchased and perused it, with an eagerness born of their necessities, and even quoted its precepts to those in whose charge they had sought relief. Beyond the borders of the United States, such was its popularity, that before the issue of a second edition it received the honor of Italian translation and publication.

The editions which followed, were revised and improved to a certain extent, sufficient at least to sustain the high reputation of the treatise; but the later, it must be confessed, were threatened with eclipse by the appearance of a new and excellent work, which was also from the pen of American authors of experience and well-known ability, and which rapidly commanded the position to which it was entitled. Certainly it was high time for a more thorough and complete revision of this volume, which, more fully than any other, has become identified, on this continent at least, with the literature of venereal diseases. The prestige of a large and deserved success could not much longer withstand the eager competition of a host of American authors and observers of unquestionable merit.

The task has been accomplished, and that right worthily. We find that we have here practically a new book, and that the statement of the title-page as to the fact that it has been largely rewritten, is a sufficiently modest announcement of the important changes in the text. Dr. Taylor, who was selected to aid in the work of revision, is already favourably known to the profession at large as an author of numerous monographs on dermatological and venereal subjects, not the least of which is his valuable essay on *Syphilitic Lesions of the Osseous System in Infants and Young Children*, New York, 1875; a work which has gained for the writer an international reputation in this special department of a special branch of medicine. It is not difficult to detect his careful handiwork in the transformation of the treatise.

How great this task has been, will best be determined by him who has made the attempt to examine, even in a cursory fashion, the literature of any other medical subject for a single year. From January to November, 1879, for example, no fewer than 394 papers, pamphlets, books, articles in medical periodicals, monographs, etc., were printed under the designation of syphilis and gonorrhœa only, and to this large number should be added, for the current year, not only those to appear during the last two months, but an equally large, if not still greater number of titles in the department of skin diseases, general pathology, general surgery, and genito-urinary disorders. All these, appearing in the English, French, German, Italian, Spanish, and Russian languages, furnish a truly formidable mass of material, which accumulates between the dates of the several editions of any given work, and much of which should pass under the eye of the writer of a systematic treatise on venereal diseases. For the day has passed, rarely to return, when originality of experience or expression can take the place of this laborious compilation, digestion and condensation of the labour of the best men. It has nearly come to this, that in the day which we see and in the departments of science we cultivate, the less original and the more catholic a book, the greater its chances of success and survival. To return to the volume before us, it is not too much to say that a still larger treatise could have been filled with what is to-day known about either nervous, hereditary or osseous syphilis, stricture, the diseases of the prostate gland due to gonorrhœa, or a dozen other topics which might be named.

We have made this explanation, chiefly because, after a thorough examination of the present edition, we can assert confidently that the enormous labour we have described, has been here most faithfully and conscientiously performed. They who know how to appreciate the difficulty of such a task, will be surprised, when they come to consult these pages for the literature of any important subject, to discover how fair an abstract of the same has been incorporated with the text.

A few illustrative examples will suffice to direct attention to this valuable quality of the work accomplished. Hydrocele, for instance, is not a subject which has a direct connection with venereal disorders, and on turning to the latest edition of Mr. Curling's voluminous treatise on the testis,[1] we find 132 pages devoted to the thirteen varieties and complications of hydrocele there tabulated. But our authors have succeeded admirably in conveying all essential information on this topic, in the closely-printed six pages which are by them allotted to the subject.

A comparison of the book before us with one of the latest published under a similar title in France, will serve to establish the fact of the relative excellence of the American treatise. The comparison is the more justifiable, as our American authors have not hesitated to make frequent references to the labours of M. Louis Jullien,[2] and even to borrow some of his plates.

On the question of the etiology of hereditary syphilis, which has of late elicited a great deal of discussion, and which has attracted the attention of eminent men, who have espoused every succeeding solution of the problems presented, the differences between the writers in comparison become conspicuous. Jullien, resting implicit faith upon the hitherto impregnable law, formulated by Colles in the year 1844, that a child affected with hereditary syphilis will not infect the breast of the mother who suckles it, hastens to set forth the following propositions as fully established: 1. Without infection of the mother, there can be no hereditary syphilis. 2. The father cannot transmit syphilis to his child, without contamination of the mother.

But these propositions have been refuted, time and again, by clinical observations of the most scrupulous exactness, extending, as is requisite, over long periods of time, and conducted under the surveillance of scientific men of established skill and probity. The results are fixed facts, which are not to be either neglected or explained away. But there is a peculiarity in the mental constitution of French medical authors, which is an inextinguishable reverence for Gallican ideas and Gallican heroes. The doctrines which Jullien sustains are the untenable theories which Cullerier first asserted, which have since borne his great name, and which were shown to be false and dangerous even before the publication of the masterly monograph by Kassowitz, which, if it proved nothing else, showed that in the paths of brilliant and original investigation, the sceptre was departing from the French nation.

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[1] London, 1878.

[2] Traité Pratique des Maladies Vénériennes, Paris, 1879.

Upon the points in question, Bumstead and Taylor express opinions which are in accord with the views of the most judicious authors in this department. Syphilis, say they, is transmissible from the father to his offspring. Viewing the law of Colles in the only light which is warranted in the present state of our knowledge, they declare that the immunity of the mother of the infant who has inherited syphilis, is due to some occult and undiscernible change in her system. They refuse to declare that such immunity is equivalent to maternal syphilis, until that syphilis is pronounced and demonstrable. This is really not merely a curious problem for the theories of doctrinaires. It is a practical and every-day question of pressing importance. Every syphilitic patient has the right to know himself or herself to be such, and it is for the interest of each as well as for the interest of society at large that such knowledge should be had. What refinement of cruelty is greater than that which suspends a sword worse than that of Damocles, for the space of years (and there are cases where this period has extended to a quarter of a century), over the head of one who should enjoy the fullest assurance of safety!

Again, with regard to the *choc en retour* of Ricord, and the fanciful "syphilis by conception," more recently advocated by Diday, of Lyons, it seems well-nigh impossible for Jullien to divest his mind of an extraordinary sentiment of reverence for him whom the French are fond of calling the "Lyonnaise master." Jullien declares that Diday's method (of regarding the menstrual derangements of the wife of a syphilitic husband as so many abortions with syphilitic ova) is exceedingly ingenious, and one which supplies the key to a great many problems. He proceeds to express his admiration for the way in which Diday has expounded his theory. At the same time, the opinion is advanced that the theories in question are not such as to command absolute conviction; and a mild request for further proof is made, accompanied by an apology for taking such a liberty.

Now the fact is, that Diday's absurd paper on this subject has already been shown to contain errors and damaging omissions. It has not, so far as we are aware, received the indorsement of a single syphilographer of repute; and its quasi-support by Jullien is, to us, an additional evidence of the prevailing French method of writing books in which everything that emanates from the pen of a French writer is regarded with at least respectful consideration, while the views of those who oppose the latter, provided the authors are not of French nationality, are esteemed as those of "barbarians," in the Greek acceptation of that word.

Bumstead and Taylor have the courage to pronounce Diday's recent article as "valueless and defective," and formulate the conclusion to which they have arrived as follows. It is in accord with what seems to us the most judicious interpretation of established facts: "We conclude that, in hereditary syphilis, the disease is conveyed either by the sperm-cells or by the ovule, diseased at the time of conception, and that infection of the mother or of the child cannot take place through the utero-placental circulation."

Lastly, a further comparison of the two books serves to exhibit the care which has been bestowed upon typographical appearance by the Americans. They furnish a list of twelve errata, printed on the page which faces the opening sentence of the introduction; and the character of these is such as to require, in the main, a change of but one letter or the addition of an *umlaut.* The errors belong, in short, to that list which should be recognized as the "inevitable" in the prosecution of so great a task as the publication of a treatise of this size and scope. The proof-reading has evidently been of the most conscientious character, and has thus contributed in no small degree to the pleasure which the perusal of the work affords.

In Jullien's work, however, can be recognized that sublime indifference to the orthography of all languages other than the French, which observant men have come to regard as a distinctive feature of their scientific publications. We have enumerated no less than thirteen typographical errors in two successive pages of bibliography given in the "Maladies Vénériennes," and it is fair to infer from this that there are more than one thousand in the entire 1120 pages. It should be added that these errors are not only those which occur in the rendition of foreign names; we note these also in the spelling of French words, and even in the titles of pages.

We have endeavoured thus briefly to suggest some comparisons between these two works, lately issued on the same subject, that the results might indicate more clearly than could the mere dictum of a reviewer what reason we have to congratulate our countrymen upon the truly valuable addition which they have made to American literature. The careful estimate of the value of the volume, which we have made, justifies us in declaring that this is the best treatise on venereal diseases in the English language, and, we might add, if there is a better in any other tongue, we cannot name it; for, while it may be admitted that there are to be found elsewhere, on certain special subjects, fuller discussions of every phase of controverted themes, there are certainly no books in which the student or the general practitioner can find such an excellent résumé of the literature of any topic, and such practical suggestions regarding the treatment of the various complications of every venereal disease.

We note that the metric system has been so far adopted by our authors that in all printed prescriptions the dose is named both in terms of the old and the new nomenclature, an arrangement which has been adopted by several German authors since the use of the metric system was in their country made imperative by law. The method of our authors is one which should satisfy the friends and enemies alike of the recommendations of the American Medical Association in the same connection. The prescriptions of our authors are, as a rule too, metrically accurate, and not mere transpositions of terms. A few errors, in the accomplishment of this task, were only to be expected; and we note one on the 573d page, where a formula is given for the treatment of phtheiriasis pubis. The proportions are accurately given in terms of the metric system, but, by the old reading, the solution of the bichloride of mercury ordered will contain 16 grains to the fluidounce. This solution would, without any question, put an end to the lice, but we may be permitted to express the hope that the tyro who first consults the page for the purpose of being instructed as to what he shall employ, will prefer to be guided in his selection by the proportion given in the metric formula.

In the matter of mensuration of urethral instruments, our authors have also, in the present edition, given a deserved preference to the French scale; figured the Handerson gauge, which we esteem far more useful than any others sold (even to the exclusion of the lately-devised "adaptable metric gauge" of Dr. C. H. Thomas, of Philadelphia); and have, in our judgment, done well in inclosing within quotation marks the name of the so-called "American scale," proposed by Drs. Van Buren and Keyes, in their otherwise admirable treatise. If these last-named gentlemen had been content with baptizing their scale with their own names, an immense deal of confusion would have been avoided. By attaching a national name to their scale of instruments they accomplished a result which we can well believe they did not anticipate. They might have been speedily forgiven for the boldness of their action in this matter, if it had resulted in giving us a truly American uniformity. As it is, we are still compelled to follow our authors in the adoption of that which "is known and used as a standard by so many surgeons in every civilized country."

In the matter, too, of the use of instruments for mensuration of the urethral chink, when it is distended, and for incision of strictures of large calibre, we congratulate our authors upon the judicious fairness with which they have handled the subject. They have not failed to give honour where honour was due, and, refusing, practically, to embody a section of a controversy in their pages, which would only serve to disfigure them, they have earned for themselves a merited commendation.

The style of the book, as rewritten, is fully equal to that of the preceding editions, which was in parts a model of elegant English. It must be admitted, however, that a species of incongruity can be detected, in the indiscriminate use of the personal pronoun, which leaves the reader occasionally in doubt, as to whether the senior or the junior author is responsible for the text, or whether they have both contributed to its lines. It would surely have been an improvement if the editorial "we" had been adopted throughout, as thus the unity of the book would have been more completely sustained.

It is sufficient to ask of our authors in medicine that they embody in their work, the fruit of the researches of the most trusted of their contemporaries and predecessors. It is too much to ask of them that they also point out to us the lines of probable advance in the wilderness of the knowable and yet unknown or but imperfectly known. We can, therefore, well afford to excuse the writers of the treatise before us, for their halt in the face of a proposition to which it seems to us the scientific world must speedily give assent. It is the proposition which asserts the contagiousness, in different degrees, of all pus. Or, to place the doctrine in a clearer light, it is a proposition which asserts that the living product of the process of inflammation is possessed of an energy which is capable of originating a like process in all living matter, this capability being proportioned to the activity of the process by which it was itself engendered.

First announced by Von Roosbroeck, we believe, and substantiated by experiments by Pick, of Prague, in so far as it relates to the matter of the acne pustule, it is an explanation of much that is either doubtful or curious in pathology. It may be found to throw some light on the "contagious impetigo," of the late lamented Tilbury Fox, and, if finally well-established, will splendidly illuminate many obscure points in the study of venereal diseases. If all pus is more or less contagious, we may be sure that the pus produced by the inflammatory process in venereal disorders, will enjoy its full share of such a power. We shall not then find it to be absolutely true, as stated by our authors (p. 398), that "the pus of a simple inflammatory bubo is like that of any common abscess, destitute of contagious properties, and therefore not inoculable." For it is precisely the pus of a common abscess which we shall one day find to possess the exact qualities which are here denied to it, unless all the sign-posts, which are now plainly pointing in that direction, be speedily removed.

But as we have said, it is altogether too much to require of our standard text-books that they be not only encyclopædias of wisdom, but oracles of prophecy as well.

The several plates in the work are all finely finished, and the reader will be pleased to find here many that are not only entirely new, but of great service in the explanation of the text. The publisher has not failed to execute his part of the labor of introducing this practically new work, in an exceedingly handsome dress. The volume is larger than its predecessors by 131 pages, but from a reduction in the size of the type, it is estimated that it contains about twice as much matter. The index to this edition, we find full and accurate. In the matter of the abbreviations of the titles of periodicals, the plan has been here followed, which was first employed by Dr. Billings, of the Library of the Surgeon-General's Office.

We take pleasure in repeating, that we believe this to be the best treatise on venereal diseases in the English language, and we congratulate the authors upon their brilliant addition to American medical literature.

The news of the death of Dr. Bumstead, which occurred on the 28th of November, 1879, and which attaches a melancholy interest to this latest work of his pen, reached us only after the completion of the preceding paragraphs. Having written in an effort to impartially consider the fruit of his labor, we have preferred to make no change in any sentence. Needless to say, however, that if we could have known the learned author was to survive for but so brief a time the exhausting labor which the preparation of his book enforced, we should have approached the task of reviewing it with greater diffidence and turned its pages with a gentler hand.

Others, without doubt, will pay the timely and tender tribute to that intellectual manhood, which is hereafter to adorn the roll of the honored dead of the profession of our country, and to those genial qualities of heart which have endeared their owner to his many personal friends. We can not but be grateful that his life was spared to add the finishing touches to this great work, in which all his largest activities were interested, and which will survive as a fitting monument to the brilliant success of his professional career. We would lay this as a flower on the tomb of the dead master, that in a field which others might esteem repulsive, he wrought that which has the fairness and purity of the spirit by which he was moved. J. N. H.

Art. XXI.—*Clinical Medicine: A Systematic Treatise on the Diagnosis and Treatment of Diseases. Designed for the Use of Students and Practitioners of Medicine.* By Austin Flint, M.D., Professor of the Principles and Practice of Medicine, and of Clinical Medicine in the Bellevue Medical College, etc. etc. 8vo. pp. 795. Philadelphia: Henry C. Lea, 1879.

Dr. Flint enjoys such an enviable reputation as an accomplished clinical teacher that his book on "Clinical Medicine" is sure to be cordially received by the profession, as indeed is any book he may write. As it is intended to be an aid to students and practitioners of medicine in the clinical study of disease, it differs principally from his work on the Practice of Medicine in containing little or nothing in regard to the morbid anatomy, pathology, and etiology of diseases, and in having a much larger space devoted to the consideration of their diagnosis and treatment. It is divided into six sections. In the first, or introduction, subjects of a general character, such as the modes of examining patients, the methods of keeping clinical records and of reporting cases, symptomatology, etc., are discussed. In the other five sections diseases, distributed into classes corresponding to the different physiological systems, are considered; each section being prefaced by general remarks relating to symptomatology and other topics of practical importance, bearing upon the clinical study and treatment of the diseases treated of in that section. This is done to avoid repetition, as far as possible in the description of each particular disease.

As this book really contains little that is not to be found in the last edition of the author's work on Practice—a work which has been reviewed in this Journal; the principal difference between them being in arrangement, it would seem to be sufficient to call attention in the present notice to his views on a few important subjects only. And first in regard to blood-letting. This he permits in pleurisy for the relief of pain, although he believes the same end may be attained by other and less objectionblae means, and condemns in pneumonia and peritonitis, as in both of these diseases there is a tendency to asthenia which is promoted by the loss of blood. He recommends it in cerebral meningitis and apoplexy, if the patient's constitution be good, his pulse full and strong, and his face flushed. When speaking of fevers, he says he agrees with Liebermeister in thinking that since the introduction of the antipyretic method in the treatment of typhoid fever, the disease has lost a great part of its terrors. He appears to prefer sponging with cold water either to the cold bath or to the wet sheet. He also speaks approvingly of the use of large doses of quinia, and gives alcohol when the pulse becomes weak, and the first sound of the heart feeble, in this following the rule originally laid down, we believe, by Stokes.

Probably much of Dr. Flint's success as a clinical teacher and observer has arisen from his habit of keeping notes of the cases under his care. As the plan which he has pursued in doing this is a very simple one we shall give it in his own words: "Volumes of records should be," he says, "of a medium ledger size with a wide margin on each page for notes and references. Commencing at nearly the middle of a page in order to have abundant room for the heading to be inserted after the case is ended, the history is carried onwards to successive blank pages, noting at the bottom of each page the one on which the history is continued, and at the top of the latter the page from which the record has been brought forward. After the volume is filled, the cases should be indexed after the names of the diseases. They may also be indexed after the names of the patients."

The book is an admirable one in most respects. It is marred, however, by evidences of haste in its preparation, as, for instance, the rule for converting Fahrenheit into Centigrade degrees is incorrectly given; and by the presence of numerous typographical errors, all of which are not included in the list of *errata*. These are slight blemishes which we can easily overlook in a work which, from its general excellence, cannot fail to be of service to the class for whose use it is intended. J. H. H.

Art. XXII.—*Manual of the Principles and Practice of Operative Surgery.* By Stephen Smith, A.M., M.D., Surgeon to Bellevue and St. Vincent Hospitals, New York. 12mo. pp. 690. Boston: Houghton, Osgood & Co., 1879.

Of the various "Manuals" and "Handbooks" published during the years of our late war, no one was received with more favour than the "Handbook of Surgical Operations," by Dr. Stephen Smith, of New York, out of which work has been developed the "Manual" now under review. In it the author has treated of the general operations of surgery; constantly having in mind, as he says, Malgaigne's suggestions as to the giving of indications and surgical anatomy as well as operative procedures.

Beginning with most useful hints as to what is demanded of the surgeon both as respects himself and his treatment of patients, the proper method of determining what is the nature of the particular case before him, the probable result of such, and what should be done for it; the author passes on to the consideration of the circumstances under which an operation should be made; the general methods of operating, of arresting hemorrhage, and of dressing the wound at the time and subsequently; the methods of repair, and the accidents that may occur during the process of healing; and then takes up in order the surgery of the bones and joints, of the muscular, circulatory, nervous, and tegumentary systems, and of the digestive, respiratory, urinary, and generative organs, and of the extremities—all in the space of 650 pages.

As a general criticism, it may be said that too much has been attempted; and that many things have been noticed that hardly come within the just province of operative surgery. Much, for example, that has been written on the nervous and tegumentary systems, excellent as it is, belongs rather to general surgery than to its subsection, operative surgery, and the same might be said of the chapter on the liver; and all through that portion of the book devoted to regional surgery are paragraphs upon the nature and symptoms of diseases that however well "adapted to present all necessary facts in the most available form for the practitioner," can hardly be regarded as discussions of the indications for operations.

One ought not, though, to complain because more good things are given him than he had a right to expect; and we pass to the notice of some of the special points that have attracted our attention. Each of the three ordinary anæsthetic agents, nitrous oxide, ether, and chloroform, are recommended to be used in appropriate cases; the danger of the latter being duly pointed out, and caution given against its administration to patients having organic disease of the heart. The fact is, though, that in the majority of cases of sudden chloroform-death the heart has been found healthy, and it cannot be told beforehand whether or not the anæsthetic may be taken with safety. Is not a surgeon then under such circumstances blamable for not giving the safer agent?

The antiseptic dressing is most favourably regarded, and constant reference to its use is made throughout the book. For example, in writing of compound fractures the author says: "These injuries have always been regarded as dangerous, because such wounds commonly inflame and suppurate, but when they are protected from the action of septic ferments recovery will occur with slight inflammation and suppuration;" and again, "Treated in this manner, spinal or other abscesses may be freely opened, their contents removed, and a healthy granulating surface established, and the sinus often closed without incurring the ordinary risks of profuse suppuration and systemic poisoning." It is certainly comforting to be told that "Valuable as is the antiseptic method carried out in all its details, most excellent results may be obtained in treating wounds by first cleansing the surface with carbolic acid solution, and then supporting the part so that the dressings may be changed without disturbing the wound; or by leaving the wound open and applying balsam of Peru freely, while the drainage is free;" and, we may add, by securing free drainage with proper-sized tubes, and closing the rest of the wound, without the application of "balsam of Peru" or anything else.

In the chapters on bone-injuries and diseases, Pilcher's views on fractures of the lower end of the radius are given at considerable length, but no reference is made to Gordon's experiments and writings; after fracture of the patella, it is directed that "the leg should not be flexed freely under three months;" amputation is declared, as a general rule, a necessary measure in gunshot fractures of the middle or lower third of the thigh (which we are very much inclined to question when such cases occur in civil life); Lücke's bone-percussion is stated to furnish "much useful information in obscure cases."

In the paragraphs on the reparative surgery of the face, free use (with proper credit of course) is made of the writings of the late Dr. Gurdon Buck, and numerous plates have been taken from the latter's work.

Here we cannot but say a word with reference to the multitude of references to authors, whose names are printed at the bottoms of the various pages. In cases like the one just referred to, such references are right and proper, but there are dozens of them that seem entirely unnecessary. Why, for example, should Le Gros Clarke's name be required to give authority to the statement that "trephining the cranium should be regarded as an operation always fraught with danger;" or Van Buren and Keyes, to that of the ordinary well-known diagnostic signs of stone in the bladder; or Leidy's or Quain's, to that of the plainest anatomical facts.

Certain of the operative procedures recommended are the more interesting to us, because they are either perhaps unlike those usually advised, or have been but recently introduced to professional notice. In wounds of the great vessels of the neck, it is directed to ligate at the seat of injury whenever practicable, no matter what the vessel may be; and to tie the external rather than the common carotid, when that trunk or one of its main branches has been opened, a rule that, in our opinion, cannot be too strongly insisted upon; in wounds of the palmar arch, pressure failing, the bleeding point is to be sought for, and ligatures applied above and below. In cases of hypertrophy of the tonsil, "removal is required only in extreme cases." In gunshot and other wounds of the abdomen, a very favourable opinion is expressed of "opening the peritoneal cavity and washing or draining off the septic fluids that would otherwise poison the blood." The "improved gum catheter" is advised to be used rather than the metallic one, in drawing off the urine, acting, as it does, "more safely, speedily, and conveniently." Bigelow's litholapaxy is described, with the statement, however, that "it will therefore be prudent to discriminate in deciding to adopt this method." Periosteal flaps in amputations are highly favored, it being stated that "the objections to the periosteal covering of the bone, that osteophytes are liable to form on the extremity and render the stump tender, are trivial when compared with the advantages which follow the protection which is afforded from necrosis and osteomyelitis, and the basis which it forms for a movable covering." Chopart's amputation is regarded with little favour; and knee-joint disarticulation is much preferred to any of the condyloid or supra-condyloid amputations, of which it is said: "The practice of dividing the condyles cannot be sustained by any rational hypothesis, nor practised on any scientific principles."

Among the, as it seems to us, more questionable procedures recommended, are that of uranoplasty when the child has reached the age of two years; and aspiration of the liver "in all cases of hypochondria and melancholia," in order that a possibly existing abscess may be discovered and emptied. Aspiration is not, as stated, a "harmless operation," and we are surprised that so excellent and cautious a surgeon as the author should have permitted himself to unqualifiedly sanction a procedure which has not been fairly tested, and has in its history but little to recommend it. To the expressed concurrence with the views of Otis, on the relation existing between the circumference of the penis and the capacity of the urethral canal, and on deep spasmodic stricture, many will take exception; as also to the declared opinion that "venereal and syphilitic stricture of the rectum results from the healing of chancroidal ulcers, . . . antisyphilitic remedies being valueless."

In treating of hernia, operations for the radical cure (of which only Wood's is described, with an "it has been reported" reference to Heaton's method) are said "not to have accomplished the objects sought with that degree of certainty which belongs to legitimate operations;" the direct inguinal variety is declared to push before it or lacerate the conjoined tendon, no mention being made of its escaping outside the margin of that tendon.

Certain things have been omitted which might well have been mentioned, *e. g.*, the use of plaster of Paris in treatment of ruptured tendo Achillis; Morton's treatment of spina bifida; Rouge's operation for gaining access to the nasal fossa; Jenks's operation for lacerated perineum. Neither lip-cancer nor the operation for its removal is referred to, though mention is made of the disease as located on the nose, tonsil, colon, penis, rectum, testicle, tongue, uterus, labia, and breast.

A few verbal inaccuracies have been noticed, *e. g.*, quadriceps extensor *cubiti*, instead of *cruris*; *genio-hyo-glossus*, instead of *hyo-glossus* muscle (as overlying the lingual artery); the external saphenous nerve a branch of the *lumbar* instead of *sacral* plexus; the inner branch of the ilio-femoral ligament running to the trochanter minor, instead of to the prominence on the ridge a half inch or so outside. In treating of venesection, it is directed to stop "when the proper amount of blood is drawn, as proved by the fainting of the patient." Are we to infer that bleeding is always to be carried *ad deliquium*?

The "Manual" is a welcome addition to the works on operative surgery, which cannot but be duly appreciated by both students and practitioners. Our only regret is that its author did not, confining it more closely to operative procedures, give a greater number of them as recommended in the treatment of various diseases and injuries; and then let us have his individual opinion upon their respective values. Such opinion would have carried much weight, coming as it would from one long known as a learned and able surgeon of no limited experience through many years. More of Stephen Smith and less of the thousand and one names referred to would have proportionately increased the value of the work.

P. S. C.

Art. XXIII.—*A System of Medicine.* Edited by J. Russell Reynolds, M.D., F.R.S., Professor of the Principles and Practice of Medicine in University College, London, etc. etc. *With numerous additional illustrations.* By Henry Hartshorne, A.M., M.D., lately Professor of Hygiene in University of Penna., etc. In three volumes. Vol. I. General Diseases and Diseases of the Nervous System. Royal 8vo. pp. 1127. Philadelphia: Henry C. Lea, 1879.

There is no medical work which we have in times past more frequently and freely consulted when perplexed by doubts as to treatment, or by having unusual or apparently inexplicable symptoms presented to us, than "Reynolds's System of Medicine;" and even now that we possess more recent works of a similar character we often turn to it in preference, with a feeling of certainty that light will be thrown upon questions which seem obscure to us. Among its contributors are gentlemen who are as well known by reputation upon this side of the Atlantic as in Great Britain, and whose right to speak with authority upon the subjects about which they have written, is recognized the world over. They have evidently striven to make their essays as practical as possible, and while these are sufficiently full to entitle them to the name of monographs, they are not loaded down with such an amount of detail as to render them wearisome to the general reader. In a word, they contain just that kind of information which the busy practitioner frequently finds himself in need of. It has therefore been a matter of surprise to us that the work has not hitherto been republished in this country.

Many years have elapsed since the appearance of the first edition of this work, and of the second edition the first volume is all, we believe, that has thus far been issued. During the interval many and important additions have been made to our knowledge of disease. In the single department of diseases of the nervous system the gain has been immense. It is certainly not more than ten years since the labours of Charcot, Vulpian, Erb, Althaus, and others—or since the publication of the part of the work which treats of these diseases—have enabled us to distinguish multiple sclerosis of the spinal cord from paralysis agitans, and have made us familiar with the clinical characters of polio-myelitis and sclerosis of the lateral columns of the cord. In order that these deficiencies may be supplied the publisher has committed the preparation of the work for the press to Dr. Henry Hartshorne, whose judicious notes distributed throughout the volume afford abundant evidence of the thoroughness of the revision to which he has subjected it. He has also added several new articles, the most important of which are on scrofula, multiple sclerosis, and sclerosis of the lateral columns of the cord; hystero-epilepsy, pseudo-hypertrophy, muscular paralysis, and chlorosis. The deficiencies to which we have just alluded do not therefore exist in the American edition.

The volume is printed in small type and in double columns, an arrangement which is certainly open to criticism, but which is perhaps least objectionable in a work which is as this is cyclopedic in character, and which will be mainly used for purpose of reference. It enables the publisher to issue the work in three volumes, instead of five as in the English edition, and consequently at a much less price. The type, although small, is distinct, and does not fatigue the eye; and the volume, notwithstanding that it contains much more than the first two volumes of the English edition, is not an unwieldy one. J. H. H.

ART. XXIV.—*Injuries and Diseases of the Lymphatic System.* By S. MESSENGER BRADLEY, F.R.C.S., Surgeon to the Manchester Royal Infirmary, etc. 8vo. pp. viii., 144. London: J. & A. Churchill, 1879.

UNTIL very recently, the lymphatic system was but little known and perhaps less studied. The knowledge given by Aselius, Hunter, Hewson, and a few others, was all we had. But of late, the scientific aspect has been much studied in Germany and France; while in England and in this country (though the scientific researches of Klein are not to be overlooked) it is chiefly the clinical side of the subject which has attracted attention, as shown in Curnow's "Gulstonian Lectures on the Lymphatic System," Busey's "Congenital Occlusion and Dilatation of Lymph Channels," and the volume before us. In noticing Dr. Busey's book (see this Journal for October, 1878, p. 527), we commended the diligent research which was shown while suggesting what seemed to us a better form. The present work is, in this last respect, exactly to our mind. It covers also the entire field, and so is more comprehensive than Dr. Busey's book, which treated only of two conditions of the lymphatic system. The author not only quotes Dr. Busey repeatedly, but in the appendix gives a *résumé* of all the 88 cases he relates.

After describing the anatomy and physiology of the lymphatics, he considers Lymphorrhœa, Lymphangioma, Lymphatic Œdema, Simple and Septic Lymphangitis, Adenitis, Lymphadenosis, Syphilitic and Cancerous Lymphatic Disease, and finally, Progressive and Regressive Metamorphosis of the Lymphatic System. It is a book to be read and studied, and on almost every page one will learn something as to an obscure and often difficult subject. In the chapter on Septic Lymphangitis, he treats of Dissection Wounds, which, at least in this country, are exceedingly rare in dissecting rooms, but are not uncommon in post-mortem examinations.

In one respect the book is decidedly at fault—there is not a single illustration in it. Any reason requiring a chapter on the Anatomy and Physiology of the Lymphatic System, would require also that it should be made clearer by illustrations, and as the author states in the Preface that he possesses a number of illustrations of lymphatic diseases, we regret that they were not reproduced. This feature in Dr. Busey's book adds very largely to its value. W. W. K.

ART. XXV.—*Glaucoma: its Causes, Symptoms, Pathology and Treatment.* By PRIESTLEY SMITH, Ophthalmic Surgeon to the Queen's Hospital, Birmingham. With lithographic plates. 8vo. pp. xv., 281. London: J. & A. Churchill, 1879.

THE subject of glaucoma is almost a perennial one for discussion in ophthalmological literature, as might be expected when we recollect that its pathology is still in an unsettled state. Mauthner and Schnabel have recently given us several articles upon the subject, and now the author of the present work comes forward with a treatise on glaucoma of 280 pages, illustrated by numerous plates, to which the Jacksonian prize for 1878 was awarded by the Council of the Royal College of Surgeons.

The work is divided into seven sections, under which are considered the etiology, estimation of tension, symptoms, pathology, and treatment of the disease. Smith recognizes the division of glaucomatous diseases into primary and secondary, though this may, perhaps, on scientific grounds, prove hereafter untenable. He includes under the term glaucoma all states of the eye characterized by an excess of tension.

Section I. is devoted to the consideration of the etiology of the disease, in which primary and secondary glaucoma is taken up separately. A very correct distinction is made between the two forms. The influence of advanced life, heredity, nerve disorders, especially neuralgiæ, the gouty diathesis, and hypermetropia are considered, the latter condition being recognized as present in the majority of cases of primary glaucoma. This greater liability of hypermetropic eyes to the disease is probably owing to the excessive thickness and prominence of the ciliary muscle. The author does not credit the connection of neuralgia of the trigeminus with glaucoma as an expression of perverted nerve influence producing persistent hypersecretion, and considers that the part played by the ordinary forms of facial neuralgia in causing glaucoma is not one of primary importance. He takes up Schmidt-Rimpler's investigations upon the peripheral irritation of certain branches of the fifth nerve, but dissents from some of his conclusions. In general terms it may be said that many things which have been numbered among the causes of glaucoma, but which are not really causes, may excite the malady even in a non-glaucomatous eye, provided those fundamental changes, which predispose to it, are already present.

In considering the special etiology of secondary glaucoma, the subject is prefaced by the assertion that "glaucoma, occurring as a complication of other maladies of the eye, is not generally attributable, as formerly supposed, to irritative hypersecretion, but to obstructed outflow of the intraocular fluid, caused by altered relations of the iris," and within certain limits this may be regarded as true. The statement that "the danger of glaucoma in anterior synechiæ reaches its maximum in cases of incarceration of the iris in extensive cicatrices of the cornea" may be questioned; it is certainly not the experience of the reviewer. The influence of posterior synechiæ, particularly to complete adhesion of the pupillary margin, in producing glaucoma, is very justly emphasized. In extraction of senile cataract, cases have been known where fragments of the cortex have proved a source of glaucomatous complications, and here Smith thinks that rupturing of the posterior capsule lessens this danger.

The general subject of etiology is somewhat briefly considered, but the observations are generally carefully made.

Section II. treats of the subject of "Tension" and its proper estimation, and begins with the axiom that "the essence of glaucoma is an increase of the intraocular pressure." Smith calls attention to the fact that displacement of the fluid in the eye is modified by various circumstances, such as variations in the elasticity of the sclera, and in the size and form of the eye, and variations in the curvature of the sclera at the point of impression. The relative accuracy of measuring the depth of the impression from the surface or from the chord of the arc, the author has endeavoured to solve by experiment, and the results led him to adopt the former method. Another point to be considered in taking measurements is the variations in the fulness of the intraocular vessels.

Smith then describes the tonometer invented by himself, and considers very carefully its action and method of application to the eye, and the description is accompanied by lithographic drawings. He gives the results of carefully conducted experiments undertaken to ascertain how tonometrical errors, due to asymmetry and varying size of the eye, might best be avoided, and as the natural outcome of his investigations concludes that the tonometer can never yield any but approximate indications.

Under Section III. are considered the symptoms of glaucoma, and in it glaucoma is itself regarded as a complex symptom. The description of absolute glaucoma and the ultimate results of the disease are exceedingly well given. Then follows an analysis of the symptoms, in which occurs a description of an apparatus constructed by the author, by which the living eye may be subjected to a pressure of known amount, variable at pleasure, for any desired time, while the subjective and objective examination may be carried on at the same time. The diminished sensibility of the cornea, often observed in acute attacks, Smith attributes to the stretching of the nerve fibres due to the pressure.

In speaking of the dilatation and inactivity of the pupil in this disease, the author refers to the subject of hypertrophy of the arterial walls under increased resistance to the propulsion of the blood, and calls attention to the fact that such hypertrophy has actually been demonstrated to exist in the arteries of glaucomatous eyes. He suggests that this may be the reason why, under a gradual rise of pressure, the blood-supply to the iris is maintained unimpaired; while, when a sudden stress falls upon the external surface of the comparatively yielding, healthy arteries, their calibre is so far diminished as to induce arterial emptiness in the iris, and consequent dilatation of the pupil. This idea has been mentioned before, and is probably the correct one.

In considering the venous pulsation on the optic disk, its limitation to a small central portion of a retinal vein, its frequent absence in glaucoma, and its frequent presence in eyes of normal tension, Smith offers the following explanation: When a main arterial trunk crosses a main vein near the margin of the disk, the dilatation of the former compresses the latter in such a way as to favour the collapse of its central portion. This tendency to collapse is greatly increased by any condition which tends to check the force of the stream at the distal end of this portion, near the margin of the disk. This, he thinks, explains the collapse of the small portion of the vein immediately adjacent to the aperture in the optic disk, synchronously with each arterial pulsation.

In Section IV. we have Part I. of the Pathology of Glaucoma. The author reviews briefly the physiological and pathological facts connected with glaucoma. He considers the subject of the normal intraocular pressure, and describes his own method of arriving at it. He then takes up the connection between the intraocular pressure and the blood pressure, and recognizes that though the former is lower than the latter, it is intimately dependent upon it, and he gives the results of experiments proving this.

The idea that the intraocular pressure is subject in some degree to the influence of the fifth nerve is an old one, on which von Hippel and Gruenhagen, Leber and Adamük have experimented again and again. Smith analyzes these experiments, contributes some of his own, and concludes that the presence in the trigeminus of special fibres, which by their action on the secreting cells, regulate the secretion of the intraocular fluid is still a moot point, though the fact that such fibres have been demonstrated in the salivary glands, is a point in favour of this view.

The author differs from Weber in believing it probable that the pressure in the aqueous chamber differs but little, if at all, from that in the vitreous chamber. He thinks that an equality of pressure, before and behind the lens and its suspensory ligament, can only exist upon the condition that this partition is incapable of yielding ; and he does not think either the tension of the suspensory ligament, or the pressure of the iris on the lens, or both, sufficient to admit of this resistance, for he proved by experiments on eyes removed from the orbits immediately after death, that this resistance of the ligament was practically *nil.* As regards the second point, the influence of the iris is either none at all or very slight, for in paralysis of the sphincter the lens has never been seen to advance.

The author next considers the physiological processes on which the intraocular pressure is dependent, and discusses briefly the points in Leber's admirable paper on "The Interchange of Fluids in the Eye." He dissents entirely from Knies's view that the true cause of glaucoma is a circumscribed inflammation of the tissues in the vicinity of Schlemm's canal, as a starting point of the obstructive changes, and he thinks it would be difficult to decide by the microscope whether the inflammation were the cause or the consequence of the disturbed relations of the parts.

He then discusses Weber's analytical papers on the physical conditions present in glaucoma, and gives the results of an elaborate and careful series of experiments by which he endeavoured to ascertain whether the obstructive changes at the angle of the anterior chamber might not be artificially produced under conditions which would preclude its dependence on swelling of the ciliary processes, namely in the excised eye. He found that an excess of pressure in the vitreous chamber equal to 5 cm. of water pressure or 4 mm. of mercury, sufficed to close the channel through which the aqueous humour normally escapes.

Another series of experiments proved that pressure on the posterior surface of the lens and suspensory ligament, unless counterbalanced by an equal pressure on the anterior surface, arrests the escape of the aqueous humour by compressing the angle of the anterior chamber ; and that this arrest occurs while a considerable quantity of aqueous humour still remains in the chamber, and while the chamber is still open peripherically, at least as far as the corneal margin, and probably rather farther. From the results of these experiments, and the conditions revealed by the microscope in glaucomatous eyes, he concludes : 1st. That the closure of the angle of the anterior chamber is the essential part of the glaucomatous process ; and 2d. It is dependent on or associated with exaltation of the vitreous pressure above the aqueous pressure, which does not exist in healthy eyes.

In opposition to the view usually entertained that the vitreous is nourished by a fluid secreted by the capillary plexus of the choroid, which reaches it by passing through the retina, Smith finds it improbable that a complex nervous structure like the retina, with an isolated vascular system of its own, should convey the secretion of an entirely different vascular tract on its one side to a structure with which it has nothing in common on its other side. Moreover, Kühne's discoveries render it almost certain that the function of the chorio-capillaris and the hexagonal epithelium is to secrete the "visual purple." Smith calls attention to the fact that the retina terminates at the ora serrata, and here begins an intimate connection between the uveal tract and vitreous, perfectly adapted for nutrition. It is highly probable that the vitreous body receives its nutrient supply exclusively from the ciliary portion of the uveal tract. He considers that detachment of the retina is more satisfactorily explained by this theory than by any other. Here the alteration in the vitreous is one either of malnutrition and consequent loss of bulk by atrophy, or of shrinking produced by inflammation and cicatrization of its tissue; and that the flow of albuminous coagulable fluid from the choroid is the natural result of the withdrawal from its vessels of the pressure to which they are normally subjected. In further support of his theory, he states that among a large number of specimens, there is no case of detached retina in which there is not marked disease of the ciliary body; and more important still, there is no instance of marked disease of the ciliary body without detachment of the retina.

Smith thinks it probable that the waste fluid of the vitreous body passes through the suspensory ligament into the aqueous chamber, and forming part of the aqueous humour, escapes from the eye at the angle of the anterior chamber, and some of his observations have been independently confirmed by Deutschmann. From his experiments on this subject, Smith formulates the following conclusions: 1st. The ciliary processes secrete the intraocular fluid. A portion of this fluid passes directly from the proportion of the processes into the anterior chamber. Another portion, proceeding from that part of their surface, which is in contact with the suspensory ligament, passes through this membrane into the vitreous chamber. 2d. The function of the suspensory ligament is probably purely a mechanical one—the maintenance of the lens in its proper position and the control of accommodation. 3d. The whole of the intraocular fluid, including that which returns from the vitreous, escapes from the eye at the angle of the anterior chamber. 4th. Under certain circumstances the pressure in the vitreous becomes greater than that in the anterior chamber by the retention in it of more than the normal bulk of fluid. When this occurs, the lens and the suspensory ligament advance so as to compress the angle of the anterior chamber, and retard or arrest the escape of the intraocular fluid. 5th. Glaucoma is the expression of this condition of obstruction.

In Section V. the subject of the pathology of glaucoma is further considered. The connection between glaucoma and senility is so close as to render it probable that the essential starting-point is to be found in the changes peculiar to advanced life. It is Smith's opinion that the tendency to glaucoma at this period depends on an abnormal relationship between the diameter of the lens and the diameter of the circle of the ciliary processes, and hence the hypermetropic eye is peculiarly liable to the disease.

In considering the connection of the vascular changes with his theory of glaucoma, Smith regards as untenable Leber's supposition, that the dilatation of the anterior ciliary veins is rather a result of inflammatory change than a pressure effect. He is inclined to indorse Weber's explanation, that the swelling of the ciliary processes, with dilatation of the anterior ciliary veins, is a natural and inevitable consequence of an increased intra-ocular pressure.

Two factors combine to produce a diminution of the distance which separates the margin of the lens from the ciliary processes: 1st. Increase in the diameter of the lens. 2d. Swelling of the ciliary processes. The former is usually the primary change, and is itself the indirect cause of the latter. Many of the author's observations on this point, and his conclusions drawn therefrom, agree with Weber's demonstrations.

The subject of the influence of iridectomy on glaucomatous eyes is then considered, and the manner in which it lowers tension discussed.

Assuming that his theory of the primary cause of glaucoma is correct, he thinks the operation has two distinct results; the opening of the angle of the anterior chamber, and the reopening of the space between the lens and the ciliary processes.

Several pages are devoted to a discussion of malignant glaucoma, of Weber's views of the so-called luxation forwards of the lens as its cause, and of his operation of puncturing the sclera for its relief. Smith has not had the successful results from the operation that Weber claims.

In criticizing the objections that may be urged against the obstruction theory of glaucoma, the author insists upon the point that closure of the angle of the anterior chamber is the cause of glaucoma, provided, 1st, that the secretion of the intraocular fluid be not so far suppressed as to render the distension of the eye an impossibility; 2d, that the intraocular fluid does not escape through some abnormal channel in sufficient quantity to neutralize the effect of the obstruction of the normal channel; and, 3d, that the closure affects a portion of the periphery of the chamber sufficiently extensive to materially retard the escape of the intraocular fluid.

In Section VI. we come to the treatment of glaucoma. The advantages and disadvantages of iridectomy and sclerotomy are fairly compared, and reference is also made to the various other operative measures which have been introduced at different times, and have since fallen into disuse.

In speaking of the employment of myotics on physiological grounds, Smith makes a good point in advising bedtime as one of the periods of application. During sleep the ciliary muscle is in a complete state of relaxation, and, if the form of the lens be really concerned in causing glaucoma, this unbroken period of rest must be a time of especial danger. The frequent onset of glaucoma during sleep is a well-known fact.

Finally, Section VII. contains an appendix of recorded cases, upon an examination of which his theory and ideas of pathology of the disease rest. Appended to this is a list of tonometrical measurements, which serve to show, among other points, how wide the limits of physological tension are.

The work is illustrated by a number of lithographs, plain and coloured; some of which are very good; particularly those representing microscopical sections of glaucomatous eyes.

The work is one which shows a large amount of faithful and careful work, with considerable ingenuity in the construction of apparatus necessary to the carrying on of the experiments, and a more than ordinary appreciation of the necessity of a careful consideration of the whole subject of tension. While some of the views advanced are not original, and have been already exhaustively discussed by other authors, there is still a good deal that is original in the manner of considering the subject and in the method in which it has been studied.

The bookmaker's work has been well done, the paper being firm and white, and the type clear, large, and provided with wide margins. The volume is one valuable both to the ophthalmologist and to the general practitioner. C. S. B.

ART. XXVI.—*Hygienic and Medical Reports.* By Medical Officers of the U. S. Navy. Prepared for publication under the direction of Surgeon-General of the Navy. By JOSEPH B. PARKER, A.M., M.D., Surgeon U. S. Navy; Assistant to the Bureau of Medicine and Surgery. 8vo. pp. viii., 1079. Government Printing Office: Washington, 1879.

THE publication of essays on medicine and hygiene, from reports of medical officers of the navy to the Bureau of Medicine and Surgery, was commenced December, 1872. The first, entitled "Contributions to Medical Science from the Bureau of Medicine and Surgery," contains ten papers. The second, "A Report on the Origin and Therapeutic Properties of Cundurango," a quarto volume, illustrated by twenty-two photographic plates, was published 1873. The third, "Sanitary and Medical Reports for 1873–74," was issued December, 1875; and the fourth, containing 70 reports and papers, was issued July, 1879.

In a prefatory statement Surgeon-General J. Winthrop Taylor (recently retired) says that the aim of these publications "is to improve the sanitary condition of our ships of war, and diffuse a knowledge of hygiene among the officers of the navy." As evidence of the necessity of greater attention to these matters he states that, "during the years 1876, '77, '78, it appears from the files of the bureau that 29,154 cases of disease were treated in a yearly average force of about 10,000; that 984 surveys were held (33—per 1000), and that 400 deaths were reported (13 + per 1000); a loss to the service of nearly 46 per 1000, as it can be supposed that only a small number of those surveyed returned to duty. By a more extended knowledge of hygiene it is hoped this large proportion can be reduced.

"During the same period there were 1273 applications from the navy for pensions; 638 claims were allowed." This implies an average annual loss in the naval service of 460 men, the pecuniary value of which is not estimated.

The volume consists of two parts. Part I., "Hygienic Reports," contains 46 reports from medical officers afloat, and tables of medical statistics of the navy for 1875, '76, '77, and '78, compiled by the editor, Surgeon Joseph B. Parker. The chief theme of all these reports is the same—the influence of deficient ventilation, and the unnecessary wetting of decks. The same story has been told in many ways to the authorities at Washington during much more than a half century, and seems never to have been heard by any of them, or rarely ever, if we may judge by the very few attempts made to remedy the evils complained of. The average air-space of sleeping berths for each man on board the several ships afloat, according to these reports, measures from 39 to 134 cubic feet, and the means of changing the air are entirely insufficient.

Medical Inspector Thomas J. Turner, in one of his admirable reports, page 99, says in this connection—

> "The prevention of disease is a section of medicine demanding much study and cautious research, for it reaches from the individual to grasp the masses, and assumes in such character the dignity of statesmanship. It is here that a medical officer comes in contact with those in command. Infrequently the suggestions of the medical officer upon the hygiene of the vessel are accepted; more frequently, however, any hint as to the preservation of the health of the crew is considered officious, as an attempt at interference, or as a reflection upon the so-called discipline; the officer classified with the meddlesome, intrusive or annoying, and very early reminded that 'in the opinion of the commanding officer, he should confine his attention to his legitimate duties.' It is not understood by many naval officers that hygiene is a legitimate and perhaps the most important part of a medical officer's duty."

As an instance of the sanitary environments of men afloat we refer to a report, page 283, of Medical Inspector Thomas J. Turner, of the U. S. Steamer Tennessee, on the Asiatic station. The ship was under steam 303 days 15 hours in 366 days. He gives two observations of extreme ranges of temperature in the fire-room. "January 31, 1877, the temperature of the fire-room was 185°, and on February 1, 1877, at 9 A. M. and 3 P. M., the thermometer marked in the fire-room 198° at the height of a man from the deck plates."

"The humidity remains about the same. In 1876 the gun-deck was wet 301 times, the berth-deck 223, not including partial wettings since July, 1876, of 83 times." He made a series of observations on the humidity of the berth-deck, which are tabulated. As Dr. Turner truly says, page 676, "The excessive humidity of the air on the lower decks has its origin almost entirely in the daily water-soaking routine which exists in the service, and to which the decks are subjected."

Besides discussions of ventilation and humidity these reports contain observations on foreign hospitals, medical topography of ports visited, and many matters of interest are incidentally mentioned.

Surgeon A. A. Hochling reports that Dr. King of the English hospital at Pernambuco, Brazil, has treated yellow fever very successfully, losing one in twelve cases, by first clearing the primæ viæ with a scruple of ipecac. and ol. ricini, if required, and then, "as a specific treatment, he gives a drink containing sodæ sulpho-carbolatis, gr. x.; aquæ ℥j; this imperial he gives during the first four or more days."

Surgeon Samuel F. Shaw tells us, page 141, that the Chinese treat syphilis with "calomel, cinnabar, and realgar, the first-named entering into every recipe. Prescriptions are given to drive out the calomel after it has effected a cure, and here is used a drug of the sarsaparilla class. Salivation is believed to be the poison of syphilis flowing out. Calomel has been in use for this disease for the last two thousand years. Not only are preparations of mercury used, but fumigations and mercurial vapor baths, local and general, are detailed in the books as having been in use from time immemorial. To remove syphilitic blotches, alum and rhubarb, in equal parts, mixed with water, are used externally. The syphilides are considered to be not so much a further development of the disease as of the mercury taken."

Surgeon George W. Wood reports, page 207, that "a small commerce has recently arisen between La Paz and the United States in a native plant, known as damiana (*Turnera aphorodisiaca*), which is found in large quantities on the western coast of Mexico, but especially in this peninsula. . . . It is here in universal use in the form of hot infusion, domestic tincture (the leaf macerated in the native mascal), and cordial. In its weaker forms it is esteemed as a general tonic, and preservative of the sexual power, while the stronger preparations are powerfully stimulant to the sexual organs of both male and female. It is undoubtedly an aphrodisiac of considerable power, somewhat tonic, slightly cathartic, and apparently having some hepatic action. Emmenagogue properties are also ascribed to it. A patent medicine is prepared from it, in the form of an agreeable cordial, and extensively sold in La Paz, under the name of Damiana Fort."

Assistant Surgeon Lloyd B. Baldwin, page 467, mentions that P. Manson, M.D., of Amoy, China, describes in the Customs Medical Reports for the half year ending March 31, 1877, the *Filaria immitis* and *Filaria sanguinolenta* as found in the dog, and discusses the connection of hematozoa with elephantiasis. Dr. Manson declares that he is able "to state positively that *Elephantiasis arabum* is a parasitic disease, and to establish on solid and incontrovertible grounds, which in a former report I [he] conjectured was the true pathology of this puzzling affection. The *Filaria sanguinis hominis*, which resembles very closely in general appearance and movements the canine hematozoa, measures slightly less than $\frac{1}{3000}$ of an inch in breadth by about $\frac{1}{90}$ of an inch in length. The canine variety appears to be naked and structureless; the human, on the contrary, is provided with a very delicate, non-contractile integument, within which the body of the animal is incessantly shortened and elongated. There is about the centre of the body an elongated yellow patch, which he believes appertains to the alimentary canal. Distinct movements of a mouth can be made out at the extremity of the head. They resemble the breathing movements of a fish's mouth." He states that a large ratio of the population of the province of Amoy is infected with the *Filaria sanguinis hominis.*

The Filaria immitis, F. sanguinolenta, and F. sanguinis hominis were originally described by Dr. Joseph Leidy in the *Proceedings of the Academy of Natural Sciences of Philadelphia* for 1850–51. In a brochure on "The Pathological Significance of Nematode Hematozoa," Calcutta, 1874, by T. R. Lewis, M.B., Staff Surgeon H. M. British forces, etc. Dr. Leidy is fully credited for these discoveries.

Surgeon J. B. Parker, the editor of the volume, contributes "A Summary of Prevalent Forms of Disease on Home and Foreign Service" for the years 1875, '76, '77, '78, compiled from reports on file in the Bureau of Medicine and Surgery.

Part II. is devoted to the miscellaneous contributions from medical officers of the United States Navy, and contains 23 papers, which we regret space does not permit us to notice in detail.

The character of the work may be understood from the citations made in the above cursory notice. As a whole it is creditable to the medical service of the navy.

The arrangement of the materials would have been more satisfactory to most readers had all the reports of each naval station been placed together, instead of being mingled or presented as they are in groups for each year. The dates of the reports are not given. One complete index to the contents of the whole volume would be more convenient than the two indices given, one for each part, neither of which is as full as it should be.

W. S. W. R.

ART. XXVII.—*Lectures on Diseases of the Nervous System.* Delivered at Guy's Hospital. By SAMUEL WILKS, M.D., F.R.S., 8vo. pp. viii., 472. Philadelphia: Lindsay & Blakiston, 1878.

THESE lectures, which were originally published in 1868 in periodical form, have been collected in the volume before us in compliance with the wishes of the class in attendance upon Dr. Wilks's course at Guy's Hospital. The additions to our knowledge of the pathology and therapeutics of diseases of the nervous system have been so many and so great, that lectures delivered ten years ago need very careful revision to fit them for the use of the student of to-day. This has, in the main, been thoroughly well done. We miss, indeed, some reference to the subject of metallotherapy in the otherwise full discussion of hemianæsthesia. This is a subject which, whether time shall show the plan of treatment to be of value or not, has since the experiments of Burq and others, unquestionably excited a good deal of interest in the profession. There is also no allusion to the symptoms which Wesphal and Erb have described under the name of "tendon reflexes" and "ankle clonus," and which are present in many forms of nervous disease. Their importance as symptoms, in a diagnostic point of view, cannot well be overrated, especially since they may be present in cases in which many of the other signs of serious organic disease are wanting or little marked. Sclerosis of the lateral columns of the spinal cord is not described, and insular sclerosis not so fully as its importance seems to us to demand. These are, however, but minor defects in a book of great value to the medical student, embodying as it does the results of the experience and observation of one of the most accomplished of the London Hospital physicians.

Many of the cases with which Dr. Wilks illustrates his lectures, and indeed sometimes his remarks, as he points out himself in the preface, will not be new to the readers of *Guy's Hospital Reports*, but this repetition is unavoidable, and does not in the least detract from the merits of his book. It renders, however, a full notice of it unnecessary, since the author's views of nervous disease have been laid before our readers in the notices in this Journal of his contribution to that series. Were it not for this we should be tempted to reproduce in part at least the judicious remarks with which he enforces his arguments in regard to the importance of the moral treatment as opposed to the medicinal treatment of hysteria.

When speaking of affections of the spinal cord, he takes occasion to say that little real knowledge of the condition of the cord is to be gained by percussing the vertebral column. In many cases of paraplegia, depending upon a slowly progressing disease of the cord, no pain is produced by it, whereas sensitiveness of the spine is not uncommon as a symptom of functional hyperæsthesia. It is also present in disease of the vertebræ. It is, therefore, a symptom which will have a different importance in different cases. The lecture on migraine will be found very interesting and well written, the author having the advantage for purposes of description of being himself a sufferer from it. He is in error, however, when he says no good description of it has yet found its way into medical literature.[1] In his hands no remedy has proved so useful in relieving the pain as guarana, given in scruple doses, repeated once or twice if necessary. The book is well printed, on good paper, and is creditable in every way to the publishers. J. H. H.

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[1] See notice "On Nervous or Sick Headache," by Dr. P. W. Lathan, in number of this Journal for October, 1873; also Dr. Liveing's book "On Megrim and Sick Headache."

Art. XXVIII.—*Transactions of State Medical Societies.*

1. *Transactions of the Medical Society of the State of New York for the year* 1879. 8vo. pp. 703. Syracuse, 1879.
2. *Transactions of the South Carolina Medical Association*, April, 1879, pp. xxxix. 85. Charleston, 1879.
3. *Transactions of the State Medical Society of Kansas*, May, 1879, pp. 117. Lawrence, 1879.
4. *Transactions of the Medical Society of New Jersey*, May, 1879, pp. 336. Newark, 1879.
5. *Transactions of the Medical Association of Georgia*, April, 1879, pp. 221. Atlanta, 1879.
6. *Transactions of the Rhode Island Medical Society for the years* 1878–9, vol. ii. part second.
7. *Transactions of the Connecticut Medical Society*, 1879, pp. 214.
8. *Transactions of the Arkansas State Medical Society*, 1879, pp. 98.

1. In the *New York Transactions* Dr. Rockwell communicates a case of intracranial tumour, interesting from its extremely rapid growth and from the diagnostic use made of simultaneous thermometric observations made on the scalp by means of Broca's device, by which several instruments are applied at one time over different portions of the head. The side on which the tumour was afterwards found, was from two to five degrees warmer than the other, and increased from before backward over two degrees. It was in the occipital region that the growth, and consequent cerebral disorganization, were discovered at the autopsy.

Dr. Stevens reports a case in which an intracranial tumour, apparently existent for years without much influence on health, at last caused arrest of mental growth, and a return to childish ways, in a previously bright school-girl of 13 or 14 years. Unsteadiness of gait was noted, and deafness of left ear. Strabismus also existed. When 17 years old she was first seen by the doctor. There was sluggishness of speech, movement, and mental action. She then began to have alarming symptoms, terminating in right hemiplegia, stupor, coma, and death within a month of her call upon Dr. S. A tumour, apparently upon, or connected with, the auditory nerve, two inches in diameter, occupied a large portion of the "fossa for the cerebellum, lying between it and the petrous portion of the temporal bone." The lobe—left cerebellar—was reduced to about one-half the normal size. The reporter directs attention to the very slight outward symptoms which for years were produced by this formidable lesion. Obliquity of vision, though changing its character from divergent squint in early childhood to convergent during several last years of life, was indeed the symptom which led to consulting a physician. Deafness of one ear may have long existed undetected, and there were some reasons to suspect it had. The comparatively trivial loss of co-ordination, and the absence of facial paralysis, are noteworthy. The final suddenness of the transition from apparent bodily health to mortal illness, is equally striking.

Dr. A. Jacobi lifts a warning voice against the excessive use of chlorate of potassa. Nephritis, either acute or chronic, is the lesion which he believes to be often produced by heroic doses of the drug.

Dr. E. G. Loring contributes a suggestive paper on the Influence of Optical Defects on Character. The mental and moral effects of unrecognized imperfection of vision, in ambitious, sensitive, or bashful children, at school, will be fully realized on a little reflection.

Dr. Sayre maintains that the "cold" or "subfascial" abscesses, such as psoas, are by no means always due to diathetic causes. Strains and blows, he believes to be frequently the efficient causes, without special constitutional tendencies. Even in the existence of scrofulous predispositions, he is inclined to think an external cause is needed to produce abscess.

2. Prof. Parker, in the *South Carolina Transactions*, presents the results of a laborious research, in which he has striven to bring together all recorded cases of operation for stone in the bladder done in the State. No limit of time is mentioned, and the details of many cases are extremely meagre. Out of 120 operations, 106 are termed "successful," with 13 deaths. The entire number collected is 131. Nearly one-half of the 120 were operated upon by the "bilateral," and one-fourth by the "lateral" method.

Dr. T. G. Simons writes upon yellow fever, which he observed as a volunteer in Memphis, in 1878. New-comers he found often "succumbed to the disease" within sixty hours after arrival, but usually in from five to eight days. Mustard poultices and footbaths, emetics of same material if any food had been recently taken, formed the first medical treatment. Then Dr. S. gave an heroic dose, once, of quinia and calomel—20 to 40 grains of the former to 20 of the latter, followed by oil or magnesiæ cit. Sponging, first with whiskey and water, and then, when fever ran high, with fearless hands, cold water was diligently employed. Enemata, bromide of potassium if headache persisted, and saline, camphorated diaphoretics, followed. Ice was freely given. Minute doses of calomel with bicarbonate of soda were often given, to allay nausea. Fresh cream, buttermilk, condensed milk, beef essence, etc., were given as freely as possible from the first. Much importance was attached to the nutritive enemata, when the stomach proved intolerant.

3. A successful reduction, after four months, of the head of the femur, dislocated upon the pubes, is reported in the *Kansas* pamphlet, by Dr. Mottram. The patient was a lad of nine years, who was playing on a pile of lumber when the whole fell over, a portion of the mass falling on the boy's knee, already brought up nearly to the abdomen, and forcing the knee outward and still nearer the abdomen. Examination gave the following result: The head of the femur lying upon the pubic bone and the iliac, above Poupart's ligament, between the anterior superior spinous process of the ilium and the femoral vessels, under cover of the psoas and iliac muscles; the buttock was flattened on the injured side; the foot and knee were very much everted, and widely separated from the other limb. The limb was shortened about half an inch. Pain and tenderness had wholly disappeared. A false capsular ligament seemed to support the head in its new position. The boy was "agile as a deer," but was obliged, when moving, to place his hand on the knee, to prevent undue flexion of dislocated femur on the trunk. Chloroform being given, ener-

getic flexion, with forcible abduction, tore open the newly-formed capsular ligament. Then, upon drawing the limb downward and rotating it inward, the head slowly resumed its normal position. Although the infiltration and ecchymosis were followed by peritonitis, requiring energetic treatment, the lad recovered remarkably well, and in six weeks was reported perfectly recovered. No splints were used, and the only restraining apparatus employed was a towel, to keep the two knees together.

Dr. Woodward reports a case of chronic nephritis and cystitis, with kidneys weighing, as removed, respectively, fifteen and twenty-one ounces. They were hard, cartilaginous, filled with pus and cysts. The pelvis of one held four ounces. The smaller is described as "nothing but a great sac filled with pus." The ureters were much distended and full of pus. The bladder was "hard and shrunken," with a capacity not greater than one ounce. The mucous coat was inflamed, ulcerated, and even sloughing. No mention is made of convulsions or coma, in the history of the case, though some dulness and slowness of mental action is mentioned as existent, but more or less removable by special effort of will, for some two years. During the last months no urea could be found in the urine. There is a bare hint that this excretion was eliminated by the bowels. General anasarca, with intense thirst and inordinate appetite, attended the last days. It is certainly a remarkable instance of protracted life and mental action, after practical destruction of the kidneys.

4. In the *New Jersey Transactions*, we find an examination by Dr. Hewlett, of the alleged use of chloroform for criminal purposes. While he acknowledges the possibility of inducing unconsciousness without awakening a sleeping child, and even, under certain favourable circumstances, obtaining the same result in an adult, he very properly believes the combination of skill, sufficient time, peculiar idiosyncrasy of subject, to occur so seldom, that, practically, no adult is criminally stupefied without resistance, alarm, and after-knowledge.

Bergen County District Society reports seven cases of typho-malarial fever in a family of ten, recently arrived from New York. As the disease broke out almost immediately on change of residence, the city house was examined, and the earth under the cellar-floor found to be completely saturated with filth from a broken soil-pipe next door. The patients were long and severely ill, but being of superior constitution all recovered. Temperature ranged from 101½° to as high as 107°. There were signs that Peyer's patches were diseased.

Dr. Heritage, writing of the diagnostic value of high temperature at the outset of scarlatina, says 101° or 102° lead him to assure friends that a febrile attack is not that disease, while 104° or 105°, and upward, indicate it, and give token of the severity to be expected. One young man of 21 years, exhibited the extraordinary temperature of 108½°, the case being severe, but ending in recovery with no sequelæ. Chlorate of potassa, with five-grain doses of salicylic acid, were given, with iron after desquamation began.

Trenton reports increased prevalence of malarial disease, and of a marked tendency to erysipelatous affections. The city is badly drained, badly policed, and traversed by nearly stagnant water-courses into which are thrown all sorts of refuse.

According to Dr. Warman, the condition of things existent in the capital of New Jersey is a disgrace to its citizens and the State.

Two cases are related by one reporter, which seem to support the idea of the contagiousness of consumption, where healthy wives broke down and died with this disease after nursing their dying husbands.

Writing of the very great efficiency of rectal nutrition, Dr. Morrison reports a case of stricture of the œsophagus, in which for twenty-three days the patient received no food nor water except per rectum; and under this treatment her health so improved that she walked about and did light housework. The stricture was then overcome, with ultimate recovery. The rectum, during treatment, was thoroughly washed daily. Another woman, with cancer of stomach and womb, was kept on food given solely through the rectum. Then for a while the stomach could be used; and thus nutrition was alternately sustained by two organs. Hunger and thirst were felt in the natural way, and satisfied by the injections as well as by swallowing.

5. The current number of the *Georgia Transactions* is mostly made up of the apparently interminable disputes about yellow fever—importation or local origin, contagion or non-contagion, quarantine or free intercourse. One writer, in a spirit with which we unfortunately have become only too familiar, can see nothing in the proposed national arrangements for quarantine, but conspiracy against the commercial prosperity of the State.

Professor Calhoun directs attention to atrophy or anæmia of the intraocular tissues caused by excessive use of tobacco. The appearance of floating specks, mistiness of vision, especially towards night, are common symptoms. Hypermetropia sometimes exists. In one case described, there was sluggishness of the pupillary movements. That complete amaurosis, much oftener than is generally supposed, is due to tobacco-poisoning, Dr. C. fully believes. Entire abandonment of the accustomed habit is essential to cure. Sulphate of strychnia acts favourably as a tonic, occasionally supplemented by electricity.

Dr. Hall reports a case where, to all appearance, twenty grains of bromide of potassium every three hours for a fortnight, produced most alarming prostration. The pulse went as low as 25, and temperature 95°. Breathing was very slow and laborious. Indeed, when first seen the patient seemed to be dying. Under active stimulation, within and without, he rallied. From the care with which the case was examined by the method of exclusion, it certainly appears as if the bromide was the only possible source of trouble.

6. In the *Rhode Island Transactions*, Dr. O'Leary reports a case of epilepsy due to injury to the head, which was relieved and apparently aided by trephining.

7. Dr. A. M. Shew has been to the famous colony for insane persons at Gheel, within a year or two. Apparently having no hobby in this direction which he delighteth to ride, he saw things as they were, and so reports in the *Connecticut Transactions*. The "couleur de rose" is sadly faded in his account. Squalid poverty and misery seem, from his description, to characterize the settlement. In six different fields he noticed women harnessed to carts. The gentler sex appeared generally "brawnier and more muscular than the men." Speaking (apparently) of the children, he says, "all had the old, worn look that is produced by overwork

and under-feeding." We do not doubt that, centuries ago, the insane were kindlier and better treated at Gheel than elsewhere. But to compare, to-day, the treatment there with that of a respectably ordered hospital for the insane, seems thoroughly ridiculous. In connection with the "non-restraint" craze, lately so popular, we notice that Dr. Shew reports, "every hamlet contained restraining apparatus." He states, however, that he saw under actual restraint only three patients. The visitor was told that, though mechanical appliances were rarely employed, the discretion of the peasant curators was the guide to their use. The patients have greater liberty than in our hospitals. "Accidents frequently occur, as in other places where the insane are aggregated. Several tragedies," he adds, "have occurred, but the lack of systematic records prevents exact comparisons. The sleeping accommodation for many patients is described as beneath the contempt of the average American "working-man." Dr. W. A. F. Browne, Commissioner of Lunacy for Scotland, calls the Gheel colony "the last glimpse of a mediæval condition, incrusted with the stains and corruption of a worn-out organization," etc. Even our American physician, Dr. Wilbur, while praising the Gheel colony, as he found it, admits that the plan would be impracticable with our people.

8. In the publication of the *Arkansas Transactions*, we notice a considerable unanimity as to the existence of a wide-spread malarial influence, and as to the curative action of mercurials.

A similar train of thought is opened by the statement, that there was observed, in various diseases, an apparent approach or resemblance to yellow fever. In attacks which would ordinarily have been called "intermittent," an unusual prevalence of gastric disturbance was noticed. During this period, when the dreaded scourge was elsewhere in terrible activity, not only were "hemorrhages and fluxes" often noted, but also an occasional case of something very like black vomit, in the absence of actual yellow fever.

Here, again, we read of heroism far nobler than that which seeks "the bubble reputation even in the cannon's mouth." Not in the ordinary course of duty, noways compelled in honour to risk his life, Dr. Edward T. Easley walked calmly into the valley of the shadow of death as a volunteer in the cause of humanity, in the stricken city of Memphis, and departed this life September 30th, 1878. B. L. R.

ART. XXIX.—*Observations on Contraction of the Fingers (Dupuytren's Contraction) and its successful treatment by Subcutaneous Divisions of the Palmar Fascia, and Immediate Extension. Also on the Obliteration of Depressed Cicatrices after Glandular Abscesses or Exfoliation of Bone by a Subcutaneous Operation.* By WILLIAM ADAMS, F.R.C.S., Surgeon to the Great Northern Hospital, etc. 8vo. pp. 80. London: J. & A. Churchill, 1879.

THE long title of this little book is needful to express its contents and aims, and if by its length it call attention to the deformities of which it treats it will do well. Mr. Adams is well known in this country, more especially as the foremost English apostle of subcutaneous surgery. Had he made no other contribution to medical science than the operation of subcutaneous osteotomy, his name would rank high, and deservedly so. His Toner Lecture in 1876 on "Subcutaneous Surgery" was a forcible presentation of the advantages of the method, and the present book on two of its applications is a substantial addition to our literature.

It is admirably printed and copiously illustrated by fourteen wood-cuts and sixteen lithographs, presenting cases and results. In the first part he considers the heretofore intractable form of finger-contraction, fortunately rather rare, but still well known. He has added to our knowledge of the pathological anatomy of the deformity and confirmed the opinion that *the trouble is not, and cannot be, with the flexor tendons, but is with the palmar fascia*—a truth that cannot be insisted upon too strongly, for on it hinges the whole question of the proper surgical treatment. Mr. Adams makes multiple punctures with an exceedingly fine-bladed knife, and severs not only the central but also the lateral bands of fascia and puts on immediate extension. The results, as shown by the figures, are excellent.

For the second—a commoner deformity—he proposed a number of years ago an ingenious operation, and here gives us the results of his experience. The depressed cicatrices following glandular abscesses and exfoliation of bone, especially of the jaw, are as unsightly as they are common. To remedy them he inserts a fine knife and divides thoroughly all the deep attachments of the cicatrix, then he everts the thus loosened scar, and inserts one or more fine pins or needles to maintain the eversion for three days. By this time the parts are swollen and succulent, and he removes the pins, thus allowing the cicatrix gradually to fall to the level of the surrounding skin. Our late war has left not a few of such unsightly scars, and when in this country, in 1876, Mr. Adams called attention to the value of his operation in his Toner Lecture, but it does not seem to have been adopted to any extent. W. W. K.

ART. XXX.—*Photographic Illustrations of Skin Diseases.* By GEORGE HENRY FOX, A.M., M.D., Clinical Professor of Dermatology, Starling Medical College, Columbus, Ohio. Parts 1, 2, 3, 4. New York: E. B. Treat, 1879.

DR. FOX is one of the small, but energetic group of workers in the domain of dermatology in this country, which is, year by year, building up a native school that shall at no distant time do credit to American medicine. Known, heretofore, as the joint author with Dr. Piffard of a concise and useful manual of "Cutaneous and Venereal Memoranda," and also of numerous papers on dermatological subjects in the current journals, Dr. Fox has now attempted the more ambitious task of producing an Atlas of Skin Diseases, in which, by the aid of photography, combined with the judicious use of colour, he aims to represent nearly all of the rare, as well as the common affections of the skin.

To say that he has not entirely succeeded in this aim is no more than to confess the inadequacy of photography as a means of portraiture where delicate gradations of colour are of more importance than light and shade or outline alone. But the subjects thus far represented are all adapted in a greater or less degree to the photographic process, and the cases have for the most part been carefully selected from a large quantity of material with a view of giving whatever is best suited for purposes of illustration.

The first fasciculus contains photographs representing *comedo*, *acne* (*vulgaris*), *lepra* (*tuberosa*), *and elephantiasis.* The first of these is, perhaps, the best picture which has thus far appeared in this collection, and is an admirable representation of the affection. The patient's face is represented in nearly or quite life size, and as if seen at a distance of eight or ten inches from the eye. The peculiar rough, greasy, thick-looking skin which usually accompanies this disease is well shown, and the portrait leaves nothing to be desired. Acne vulgaris is another very good picture, and is admirable in every respect except in the colouring, which is too vinous to be natural.

In the second fasciculus there is a well-depicted case of keloid of the face in a negro, following variola. This portrait, although smaller than those of acne, is sufficiently large, and gives a good idea of this disease. The same may be said of the picture of rosacea, though here also the artist employed to colour the photograph has given a too vinous tint to the skin. The portrait of psoriasis is a good one, representing the back, upon which some half dozen sharply defined coin-sized patches of disease are delineated. In the plate of ichthyosis, we have a disease shown where the photographic process produces, perhaps, its best effects, and, consequently, we have here a picture which leaves little to be desired.

The fourth fasciculus is in some respects the least satisfactory of those which have yet appeared. The portrait of leucoderma does not appear to have been well selected to render a good idea of this very strongly marked affection. The contrast between the hyper-pigmented and the pigmentless skin is not so well defined as it might be, and the position of the figure is too far away to give the full effect of the features of this disease. Why Dr. Fox chooses to call tinea versicolor "chromophytosis," passes our understanding. The former is the common well-known name of the disease, the one which has been adopted by dermatologists the world over, and it is, we venture to say, likely to continue in general use. An unusual name like "chromophytosis" seems, therefore, out of place in an atlas like this intended for general circulation. The affection is well portrayed.

The letter-press is very clear and satisfactory. The plan followed is that of giving a brief description of the case in small type, followed by remarks at some length upon the nature of the affection considered in general, together with the ordinary plans of treatment.

This contribution to American dermatological literature, so far as it has yet been issued, is creditable, and we trust that the future numbers of the atlas may be even still better than those which have already appeared.

A. V. H.

Art. XXXI.—*A Manual and Atlas of Medical Ophthalmoscopy.* By W. R. Gowers, M.D., F.R.C.P., Assistant Professor of Clinical Medicine in University College, etc. 8vo. pp. xii. 352. London: J. & A. Churchill, 1879.

This volume is an evidence of the growing interest of the profession in this important branch of diagnosis, and is by far the most important contribution to the subject in the English language since the publication of the well-known work of Allbutt on the "Use of the Ophthalmoscope in Diseases of the Nervous System and of the Kidneys." In his preface the author acknowledges his indebtedness to this work, and also to the writings of Hughlings Jackson, of Leber, and of Förster, and states that his "first intention was the publication of the series of illustrations of medical ophthalmoscopy contained in the appended plates, and of the cases from which they were made," but he thought "that the utility of these would be increased by the addition of a systematic account of the subject which they illustrate."

He excuses himself from consideration of the use of the ophthalmoscope in the study of the action of drugs, on account of the great diversity of statements on this subject, which would make such a chapter "merely a collection of contradictory assertions." He very properly insists on the teaching of ophthalmoscopy to students at the outset of their hospital instruction, and remarks: "Its [the ophthalmoscope's] efficient employment and still more a correct knowledge of the various appearances, are only to be acquired by a considerable amount of practice. When the student, as is now too often the case, only succeeds in seeing the optic disk just before he leaves the hospital, his knowledge of the use of the ophthalmoscope, in most cases, ends with this. Whereas the whole of his practical work in the medical and surgical wards and in the medical out-patient room supplies him with opportunities for practice and education in the use of the instrument, and the study of the various aspects of the normal fundus without any interference with other work—opportunities which, if lost, rarely return, and which are not to be found in the practice of the ophthalmic surgeon. I think, indeed, that a perusal of the account contained in the following pages, of the large number of diseases in which significant changes in the eye are common, will support the opinion that the condition of the fundus should be systematically described in medical case-taking, and it is only by early education in the use of the ophthalmoscope that such a result can be obtained."

The work is divided into two parts. In the first, the various changes in the retinal vessels, optic nerve, retina, and choroid, are carefully described, and the pathological changes to which they are due discussed with considerable minuteness; in the second, the same phenomena are again described and treated of as they occur in special diseases.

The author insists, with right, on the absolute necessity of using the direct method of examination in judging of all minute changes in the fundus, on account of the lower degree of illumination required, and of the much greater enlargement of the image thus obtained.

His remarks on retinal hemorrhage are very interesting, but on some points he seems to us unnecessarily sceptical. Thus at p. 25, we find the statement that "it is doubtful whether extravasations into the retina occur, however small, except from actual rupture of vessels." In the absence of positive proof to the contrary, it is difficult to see why red blood-corpuscles should not escape by diapedesis here as in other tissues.

Embolism of the retinal vessels is discussed minutely, while thrombosis is allotted only part of a page. The interesting observations of Michel on this subject are not alluded to, and although published in 1878, while our author dates his book 1879, had probably not reached him when the chapter was written.

Inflammations and atrophies of the optic nerve in their various forms, naturally receive a large share of attention. With Leber, he prefers to call inflammation of the intraocular end of the nerve "papillitis," to distinguish it from inflammation of the entire optic nerve. "Although the custom of employing the term '*optic neuritis*,' as a designation for intraocular inflammation, makes it inconvenient to restrict it to inflammation of the nerve trunk."

The author recognizes three stages of intraocular neuritis: 1. Slight papillitis, or congestion with œdema—obscuring but not entirely hiding the edge of the disk; 2. Moderate papillitis obscuration of the edge of the disk, or of the affected portion, complete even to indirect examination; 3. Intense papillitis; great swelling; veins at first large, and arteries small; many hemorrhages. He does not think that at present we have any entirely satisfactory explanation of its pathology. He rejects the vasomotor theory as depending for its support chiefly on the absence of any other explanation, and quotes Leber, who says that it involves "a mechanism not known to exist, and a complex relation of the optic nerve to all parts of the brain difficult to conceive of." The theory of its production by the injection of intracranial fluids through the subvaginal space into the lymph spaces of the head of the nerve, also fails to satisfy him. "The facts of medical ophthalmoscopy certainly made it difficult to connect papillitis with increase of intracranial pressure. If we consider the cases in which intracranial pressure is raised to the highest point which it ever reaches—chronic hydrocephalus—we find optic neuritis the rare exception, and when it occurs, never intense." That distension of the sheath is certainly very common in cases of optic neuritis, he admits, but thinks that "it alone is probably insufficient to cause papillitis, but may perhaps intensify the process otherwise set up, leading to retention or augmentation of fluid in the lymphatic spaces in the eye, fluid which may in some cases possess an irritative quality."

Descending neuritis he believes to be a more common cause of papillitis than is usually allowed, and suggests that "a condition of irritation may be propagated down the nerve which cannot be recognized by the microscope, but which, reaching the papilla, may excite a papillitis."

As regards the frequency with which papillitis occurs in cases of intracranial tumour, Dr. Gowers thinks that the statistics of Annuske and of Reich (giving 93 per cent.) are exaggerated, and that it really occurs in about four-fifths of the cases (80 per cent.).

He gives some interesting cases, showing the very various periods of the disease in which it may manifest itself. Thus at p. 79 he relates two cases where the papillitis preceded by several months all other symptoms of brain tumour; and on the other hand, at p. 129, a case of Dr. Jackson's, where the patient had symptoms of cerebral tumour for nine years, and a development of neuritis only six weeks before his death. He very properly remarks that, in many cases, "optic neuritis is a transient event in the history of cerebral tumour, and not a constantly associated condition," and details a case where neuritis came on and lasted only six weeks, after which the disks became normal, and continued so till death.

At p. 155 we have a discussion of the changes of the optic disks after injuries of the spine, in which, while admitting that in some cases of spinal injury ocular changes supervene, he justly remarks, "that the scientific relations of the subject have not escaped the sinister influence which litigation exercises on the investigation of facts; and there is no doubt that the pathological nature of many of the appearances described in these cases, has been the result of an affection of the mind of the observer, rather than of the eye observed."

It is an ungracious office to point out defects in so good a work, but when we read, at p. 85, of the ophthalmoscope of Helmholtz consisting of thin plates of *tinted* glass, we should, were it not for the general thoroughness of the book, think that the author had never used this form of the instrument. On the preceding page the statement that "wasting" of the fibres of the optic nerve occurs "when complete opacity has rendered the cornea or lens for a long time impermeable to rays of light," will be read with astonishment by all ophthalmic surgeons, many of whom have had an opportunity in their own practice of seeing good sight restored after ten and twenty years' blindness from cataract.

Appendix III., containing the detailed histories of fifty illustrative cases, is a valuable addition to the work.

The atlas is bound up with the book, and consists of two coloured plates, ten autotype plates of sepia drawings, and of four plates of microscopic appearances. In our judgment the reproductions of the sepia drawings are the most successful. The coloured plates present, of course, many more difficulties, both in the original water-colour and in its chromo-lithographic reproduction, and the marvellous beauty and fidelity of those published by Jaeger in his *large* atlas, have perhaps made the ophthalmoscopic world unduly critical of all subsequent productions.

In conclusion, we can cordially recommend the book to all readers who desire to possess a careful and well-digested work on medical ophthalmoscopy.

W. F. N.

ART. XXXII.—*Statistics of Placenta Prævia collected from the practice of the Physicians in the State of Indiana.* By ENOCH W. KING, M.D., Galena, Ind. 8vo. pp. 50. 1879.

HAVING been engaged in doing the same self-denying work in another line of the obstetric art, we can sympathize with Dr. King in his disappointments, and commend him for his perseverance and success. To collect statistics by means of circular letters, after having tabulated all the cases that have been published, is a laborious self-imposed task; but it is the only method by which such records can ever be made valuable as the means of conveying the whole truth. There is a real pleasure in this kind of a hunt, which is only secondary to some other forms of the same recreation, and an inward satisfaction when we feel that we have not only completed our task, but left nothing undone to make it a thorough representation of past successes and failures. Statistics are often decried, and characterized as of little or no value, because they fail to present the whole case in question; but we are happy to know, and feel, that there are a few exceptions which will not be placed in this list.

Dr. King presents us with a table of 112 cases, in a form which enables us to comprehend their true character as to danger, methods of treatment, and results. What we require to know is not so much the skill of a Robert Barnes in saving nine out of ten cases, as the result of the general practice of the profession, and the methods which have been most successful in saving life. We cannot all procure the implements required for dilatation, hot-water douching, etc., just when we require them; but we can learn what has been the reason of the greater success of men like Barnes, and act as near to it as the circumstances of our location will permit.

Of the 112 cases of placenta prævia, 31 died, and 81 recovered; and of the children, 59 were dead, and 53 living. In 58 cases version was the principal treatment adopted, and resulted in saving 41 women and 29 children; and in 15, where the tampon appeared to have been the chief reliance, there were 13 women and 9 children saved. In 7 cases, where noted, the hand was passed through the placenta, saving 4 women and 3 children; and in 12 at the side of the placenta, under which plan 10 women and 7 children were saved. In 29 cases, where delivery took place at from 6½ to 8½ months, there were but 6 deaths in the mothers, although 18 children were dead. In 11 cases the placenta was entirely detached, as recommended by Drs. Kinder Wood, Simpson, and Radford, and 9 women were saved, with but 2 children. In 9 cases in which ergot was mainly relied upon there were 5 recoveries and 4 deaths. In 7 cases the women were left to nature, and 4 recovered, with 2 children saved. In 97 cases the hemorrhage was profuse in 62, moderate in 30, and small in 5. In 106 cases the presentation was partial in 28, and complete in 78.

Dr. King's table corroborates the statement of Dr. Trask, that the largest number of cases is found in second pregnancies, thus disagreeing with those who claim that the condition is most frequent in women who have borne several children.

We are happy in commending Dr. King's valuable work, to be able to say that he will continue his researches another year, and we shall hope to lay a summary of his completed work before our readers. R. P. H.

Art. XXXIII.—*Recent Works on Surgical Diagnosis.*

1. *A Practical Treatise on Surgical Diagnosis, designed as a Manual for Practitioners and Students.* By Ambrose L. Ranney, A.M., M.D., Assist. Prof. of Anatomy in Univ. of New York. 8vo. pp. xii., 386. New York: William Wood & Co., 1879.
2. *A Guide to Surgical Diagnosis.* By Christopher Heath, F.R.C.S., Professor of Clinical Surgery in University College, London, and Surgeon to University College Hospital. 12mo. pp. xii., 214. Philadelphia: Lindsay & Blakiston, 1879.

These books treat so nearly of the same subjects that they may fitly be placed together at the heading of the short notices of their contents which it is intended to lay before the readers of this Journal.

1. Dr. Ranney's book, it will be seen, is the larger and more pretentious volume, and will claim our attention first. From the method of presenting the subjects of which it treats it would seem to mark an entirely new departure in book-making. It consists largely of a collection of tables of contrasted manifestations of disease, by a consideration of which a differential diagnosis may be arrived at. In this way surgical diseases which resemble each other are made to pass before the reader by twos, and attention is directed to the points which they have in common and to those in which they differ.

In moderation, the plan is useful and has for a long time been availed of by lecturers and authors to render more clear the subjects of which they treat; but for a book to be composed almost entirely of them is both unusual and, in our judgment, very unsatisfactory.

Dr. Ranney divides his subject into eight parts. These parts are: Diseases of Bloodvessels, of Joints, and of Bone; Dislocations, Fractures; Diseases of the Male Genitals, of the Abdominal Cavity, and of the Tissues. Of course, such a classification leads to many difficulties; thus, for instance, we find under Diseases of the Abdominal Cavity scrotal hernia and hydrocele contrasted, when, in fact, neither of them can be considered as being within the abdomen, while the differential diagnosis between ovarian dropsy and ascites is considered under the head of Diseases of Tissues.

When we come to examine the accuracy of Dr. Ranney's statements, we cannot altogether recommend him as a safe guide. In his introductory remarks upon diseases of the urethra, he speaks of simple, unspecific urethritis at about the same length as he does of gonorrhœa, and makes no mention of the exceeding infrequency of the former affection. Again, under the head of strictures, he speaks of "bridle stricture" "where bands extend transversely across the urethra," as one of the varieties which may be observed; and, under the head of deformities of the urethra, he mentions that "valvules pointing backwards and obstructing the flow of urine, but not the passage of instruments, have been reported." Surely, if it is necessary to refer to such doubtful surgical curiosities in a treatise on surgical diagnosis intended for students as well as practitioners, it would be well to note their rarity, even if no mention is made of the fact that many surgeons may be found who will deny their existence altogether.

Dr. Ranney has depended largely upon the opinions of standard authors for his statements, and gives at the end of the volume a list of those whose writings he has consulted. We confess to some surprise at finding the name of Allingham absent therefrom, for certainly no one can safely venture to discuss diseases of the rectum and disregard the labours of the surgeon of St. Mark's upon the subject.

2. Mr. Heath's book is arranged upon an anatomical, or rather regiona system, and, as a consequence, the various affections which occur in the same locality are presented to the reader very much as they appear in actual practice. As the book is not "a treatise," it does not attempt to do more than present certain salient features of each affection, and in so doing it gives very valuable hints which could only come from one who possesses both the opportunity and ability to observe accurately. It is, indeed, this feature of personality which gives the book the interest it possesses, and the reader feels that the statements of the author, as evidently the results of close personal experience, are entitled to his best consideration.

Although the plan of arrangement adopted by Mr. Heath makes the reading of his book more interesting than that of Dr. Ranney, even with this advantage the subject changes rather too often and too suddenly to make it a pleasant volume for continuous study. Then it is eminently unsatisfactory to get nothing from the author as to his views of the most appropriate treatment.

The tabular arrangement of contrasted symptoms is adopted in many cases, and in some the tables are very valuable,—noticeably among them paragraph 57 on Ulcers of the Face. Lupus, Rodent Ulcer, Epithelioma, Syphilis, and Struma are in this way, and very satisfactorily, compared.

While Mr. Heath is a very sound surgeon, and his experience so extensive that we hesitate to differ from him, we must do so in at least one instance. On page 49, in speaking of cancrum oris, it is said to occur in unhealthy children with bad surroundings, "or who may possibly have been dosed with calomel 'teething powders.'" Now it is certainly unwise to so refer to calomel as if it was a frequent cause of cancrum oris, for we cannot suppose that Mr. Heath really so regards mercurial preparations. If that is his opinion, we unhesitatingly take issue with him, as a moderately extended experience has failed to show us the case where the judicious use of calomel has been followed by injurious effects in infants.

As we have before said, Mr. Heath's book contains very many valuable practical suggestions, but we cannot but think that he has done unwisely to incorporate them in a little volume, which will most probably have but a very limited number of readers. We say this because we think that most surgeons, when perplexed by an obscure case, will turn to a work on Surgery in which, besides the merely diagnostic points, they will also find methods of treatment. Men who are so uncertain of their own diagnosis as to require frequent consultations with a book, will most generally be equally uncertain about the treatment to adopt.

The system of marginal readings adopted by Mr. Heath is most excellent and one which much increases the value of any work intended for reference. The paragraphs are numbered consecutively. It will be thus seen that the book is admirably suited for future expansion, and we hope that such will be its fate.

Manuals and short helps may be very well in their place, and that there is a place for them is unfortnately proven by the demand for them, but they can never safely be substituted for thorough and conscientious study, which will alone make the thoroughly furnished surgeon. S. A.

ART. XXXIV.—*The Heart and its Diseases, with their Treatment, including the Gouty Heart.* By J. MILNER FOTHERGILL, M.D., M.R.C.P. Lond., Assistant Phys. to West London Hospital for Diseases of Chest (Victoria Park); Associate Fellow of College of Physicians of Philada. Second edition (entirely rewritten). With illustrations. 8vo. pp. xvi., 476. Philadelphia: Lindsay & Blakiston, 1879.

FACING the title-page of Dr. Fothergill's much improved treatise is a frontispiece of the position of the heart and large bloodvessels from DaCosta's *Medical Diagnosis;* and in the body of the volume the reader is confronted with frequent quotations and figures from the well-known work of the Philadelphia clinician. Dr. Flint, of New York, is likewise quoted here and there, as are also a few other American authorities less well known in medical literature. This reference to opinions emanating from the United States will not fail to be appreciated on the western side of the Atlantic, and increase the interest with which the volume will be received.

Dr. Fothergill has treated his subject from the clinical standpoint, pathological disquisitions being brief and infrequent. He commences, however, with a chapter on the evolution, and blood and nerve supply of the heart, its comparative anatomy and the like, in great measure written at his request by Mr. Alban Doran, and illustrated by woodcuts from Gegenbauer's "Elements of Comparative Anatomy." In discussing subjects well worked up by other observers, the author quotes in detail in preference to presenting generalizations of his own. Thus, Dr. Balthazar Foster furnishes more than eight pages on the sphygmograph; the account of ulcerative endocarditis is abridged from Von Dusch, and displacements from abdominal pressure have been described by Mr. Knowsley Thornton, while other authorities are freely quoted in connection with a variety of special conditions.

The work is by no means a compilation, however. The individuality of the author is strikingly marked at many points, especially in associating disease of the heart with a condition of lithiasis; attention to which is frequently directed in the text, notwithstanding that some sixty pages are specially devoted to a consideration of "The Gouty Heart" itself. The chapter on physical exploration is written with care and precision, and attention prominently drawn to the importance of detecting early lesions before murmurs have become developed. Some remarks on the character of the pulse, as an aid to diagnosis, are much more full and circumspect than is usual with authors, and will be of great value should observation verify the special points of significance indicated. The reader is duly cautioned against placing too great a dependence upon instruments of diagnosis, and taught the importance of appreciating general conditions, so as to be able to detect the nature of changes which are giving rise to cardiac disturbances, and then utilizing their susceptibility to remedies as valuable aids in prognosis.

Among the most interesting and suggestive portions of the treatise are chapters on "Some Conditions which Simulate Organic Disease of the Heart," "Irritable Heart," "The Gouty Heart," "Elements of Prognosis," and the "Treatment of Organic Disease of the Heart." Dr. Fothergill frequently quotes Latham's remark, "The treatment of diseases, rightly considered, is, in fact, a part of their pathology!"

Though recognizing the great value of rest in the treatment of cardiac disease, the author inculcates caution in placing too much reliance on rest and the institution of expectant treatment, simply because the symptoms are much ameliorated by the repose of heart and body. The paramount importance of rest is recognized chiefly in acute inflammatory diseases of the heart, in which connection the following language is employed: "It is enough to make one despair of the reasoning power of the species to see how the lessons of pathology have been forgotten and disregarded by all writers—the writer not excepted in the first edition—in their management of endocarditis." "Yet physiological rest, or the nearest practical approach to it, is as necessary for an inflamed valve as for a sprained ankle. The patient ought to be kept quiet in bed, and the arterial blood pressure lowered by chloral hydrate for some time, seven or ten days at least, after the acute symptoms have passed away. By so doing, we reduce the strain upon the inflamed valve tissues to the minimum, and so limit the growth of connective-tissue corpuscles, whose subsequent contraction produces such terrible consequences. Such subordination of the immediate to the permanent treatment of rheumatic endocarditis will save many a patient from a materially injured mitral valve, with all its dire results." The value of the course recommended is incontestable, and the more deserving of notice that the advice has so long escaped due promulgation.

The chapter on the treatment of organic disease of the heart includes a comparatively elaborate dissertation on digitalis, extracted from the essay which gained the author the Fothergillian gold medal of the Medical Society of London for 1878; and a few special sentences follow on the action of belladonna and aconite on the heart. Digitalis is considered rarely applicable to conditions of hypertrophy, especially when associated with atheromatous arteries, because it produces contraction of the peripheral arterioles, increasing the blood pressure, and thus endangering the risk of apoplexy from rupture of an encephalic artery; an accident which is stated to have occurred, even when the hypertrophy was commencing to fail, in incipient fatty degeneration. In dilatation, on the other hand, its free use is regarded as permissible, not only without danger, but with positive advantage; and it is questioned whether any risk can be incurred by the free use of the drug until the dilatation has become notably reduced, a couple of interesting examples being adduced in illustration of the proposition. The indications for the use of digitalis, in the several valvular lesions and other morbid conditions, are discussed seriatim. This whole chapter on treatment will well repay careful perusal.

Under the heading of "Irritable Heart," adopted from DaCosta, who is freely quoted in the context, Dr. Fothergill includes the conditions spoken of in the first edition as muscular subparalysis and hyperæsthesia of the heart. The author's experience is teaching him that irritable heart is a form of disease with which we are to become more and more familiar. The cases seen by himself have furnished a history of long-continued overwork with anxiety, the neurosal diathesis being pronounced in all of them, and the most frequent examples being medical men.

The most remarkable of the eighteen chapters in the volume is the fifteenth, on "The Gouty Heart." The recognition of an association of changes in the heart and arterial system, with changes in the structure of the kidneys, is traced from the observations of James, of Exeter, in 1817, through those of Bright, and the later ones of Rokitansky, Handfield Jones, Traube, George Johnson, Gull and Sutton, and others. The importance in which this subject of the gouty heart is held by the author is enforced by an interpolatory announcement that "the whole subject will be discussed in a forthcoming work, on 'Gout in its Protean Aspects,' which will be written as soon as the demands of an increasing practice will permit." As increasing practice usually prevents extensive literary effort, the author might be cautioned that excess of authorship, in an otherwise busy man, may be incompatible with immunity from some of the cardiac maladies he has so lucidly described.

The earliest pathological change which eventuates in the gouty heart is considered to be a condition of lithiasis, the waste products of the albuminoids remaining in excess in the blood. This condition is indicated by preternatural fulness and tension of the arteries, and sometimes abnormal fulness of the veins likewise. The high blood-pressure in the arteries impedes the flow of blood from the left ventricle, and muscular hypertrophy is the result. A slow, steady pulse is mentioned as characteristic of the cardiac vascular changes of chronic renal disease, and it is affirmed that "the first touch of the patient's pulse should at once arouse the suspicions of the medical man as to the real condition in the early stages of the gouty heart, no matter what the complaint for which he is consulted, and should guide the line of treatment," which should be directed to combating the lithiasis. The risk of apoplexy in this condition is strongly insisted on as present from first to last, "even when the heart is far advanced in fatty degeneration." Dilatation subsequent to hypertrophy, aneurism, and valvular lesions are described as consequences of the gouty heart. In fact, a variety of diseases of the liver, kidneys, skin, mucous and serous membranes, are discussed as concomitants of the affection. Even the aspects of the teeth and of the hair are pronounced significant. It is mentioned that, in the dead-house of Vienna, diseased kidneys were invariably found where occasional white hairs were scattered here and there amidst perfectly unchanged black hairs, in persons who had not died from kidney disease, or given evidence of kidney disease during life. It has been stated by some pathologists that hearts and kidneys in a state of absolute histologic integrity are of exceeding rarity; and if this be true, and cardiac and renal lesions be as frequent evidence of gout as intimated in the chapter under consideration, then the gouty heart must be well-nigh universal, an inference that cannot be conceded.

The progress of the subject of the gouty heart is described with such an amount of detail that the reader must be referred to the original. Though the prognosis is considered good as to life in the early stages, so good "that the condition of the gouty heart and kidneys is rather protective against ordinary maladies, . . . the progress and termination of the gouty heart is as unpleasant a subject for contemplation as medicine can furnish. The prognosis is steadily downward and the vicious circle ever widening, and new miseries are added to a load already felt intolerable. . . . The world no longer possesses any attractions for the patient; and when the last final scene is reached, the impression remaining in the minds of the survivors is rather that of trouble removed, suffering ended, than an acute sense of loss sustained."

Although there is much to commend in the industry evinced by the author, the care in the style of composition, and the word-painting occasionally indulged in, exception may well be taken to the introduction of considerable gossipy language, occasional repetitions of the same material in different parts of the text, and multiplication of consecutive sentences of identical import, which tantalize the reader whose leisure is limited, and are of no service but to increase the number of printed pages. The great amount of valuable information presented, still renders the volume an acceptable addition to the library of the practitioner. J. S. C.

ART. XXXV.—*The National Dispensatory; containing the Natural History, Chemistry, Pharmacy, Actions and Uses of Medicine. Including those recognized in the Pharmacopœias of the United States, Great Britain, and Germany, with numerous references to the French Codex.* By ALFRED STILLÉ, M.D., LL.D., Professor of Medicine in the University of Pennsylvania, and JOHN M. MAISCH, Pharm. D., Professor of Materia Medica and Botany in Philadelphia College of Pharmacy. Second edition, thoroughly revised, with numerous additions. 8vo. pp. xi., 1680. Philadelphia: Henry C. Lea, 1879.

THE issuing, within a single year, of two editions of a large and costly scientific book of reference, is proof of the esteem in which such work is held. And this flattering, but justly merited, meed of praise we find accorded to the National Dispensatory of Stillé and Maisch, as its second edition quietly takes its place on our shelves beside the still fresh and youthful "first."

It is an earnest of the plain intention of the authors to spare not themselves that their book may be perennial in its freshness, that not even during the first few months following publication do they rest before beginning the tiresome task of revision. Everywhere, by a paragraph here —a mere word there, do we see that the most thorough and careful rereading and re-writing have been bestowed upon the hundreds of pages. Yet, though a good deal has been added, the size of the book has not visibly increased—printers, like street-car conductors, having an extraordinary faculty for always finding "room for one more."

But the energy in so soon bringing forth a revised edition, which we admire as a reader, we find extremely perplexing as a reviewer. Our "occupation is gone;" for of so very new an edition there is little for the reviewer to say,—the main features of the book remain the same, and the additions are, of course, in harmony with the existing text. The new work is, therefore, the old one, of which notice has already been taken (see number for July, 1879), only brought to represent more closely the knowledge of to-day, and with amplifications and corrections.

As said in the former notice, no progressive practitioner of our profession can afford to dispense with this important book. He who follows its teaching will be learned, and if, in practice, he be unduly influenced to mistrust the powers of drugs, he will err, if err he must, most decidedly on the "safe side." E. C.

ART. XXXVI. — *Vorlesungen über neuere Behandlungsweisen der Syphilis.* Von Dr. CARL SIGMUND, Ritter von Ilanor, etc. *Zweite vielfach vermehrte Auflage.* 8vo. pp. 160. Wien, 1880.

Lectures upon the Modern Treatment of Syphilis. By Dr. CARL SIGMUND, Knight of Ilanor, etc. Second enlarged edition.

WHEN a veteran like Sigmund speaks he may well command the most respectful hearing, and when, after an observation of syphilis larger than has fallen to the lot of any other man, he gives his deliberate judgment, in language which evidences the conscientious thoroughness with which he has studied so important a disease, every student is put in possession of a prize whose worth is beyond computation.

And this is what we find in these lectures. Their subject-matter is a perfect mine of mature thought, and in their manner there is a transparent fairness which cannot fail to charm, even should there be a few unconvinced by what has so little appearance of an argument.

At the outset the importance of avoiding the error of regarding syphilis as a "specialty" is dwelt upon, and the necessity for the broadest and most thorough education in considering a disease so widespread, so grave, and so intimately related to others. After this there is a brief statement of the separate and distinct natures of gonorrhœa, the simple venereal ulcer (chancroid) and syphilis, of which the primary lesion is the chancre. Each he believes to be due to a special germ, never yet isolated. The repeated occurrence in the same individual of the former two is contrasted with the exceptional second attack of the latter, with which is coupled this remark: "The extremely few instances of a repeated attack of syphilis (reinfection), which I have myself observed, have left me much in doubt as to the entire correctness of the previous or of the present diagnosis. Further I should add, that I know no case in my own circle of observation, in which, after an established attack of syphilis, a later, new and second infection followed. I know, of course, cases so designated, a more careful observation of which, however, controverted the diagnosis of a second infection."

In regard to *diagnosis*, attention is called to the unreliability of the patient's statements, and the indispensability of a thorough examination by the doctor. As far as possible this should include every part of his skin, as well as the various inlets and outlets of the body. In menstruating and lying-in women there should be no excepting of the sexual organs, notwithstanding the established prejudice against such examinations. Indeed, they are then of special importance. With the examination for syphilis proper there should be a most thorough investigation for open or latent diseases of other sorts, lest their appearance during treatment be misconstrued by the physician, which would be unfortunate for science, or by the patient, which would be injurious to the doctor. In conducting the examination, Sigmund recommends the use of all available instruments of precision, including that to which Sir Henry Thompson has so recently given the cold shoulder, namely the endoscope.

Of the *symptoms* of syphilis, he gives the well-known details, and for convenience divides them into primary, secondary, and tertiary, with the equally well-known qualification, however, that nature often disregards this artificial arrangement.

In regard to *treatment*, he advocates the early destruction of the initial lesion. This may be by the knife, even to the extent of circumcision where the prepuce is its seat, or amputation of the labia minora or portio vaginalis of the uterus, if the lesion be there. Aside from the advantage of removing the bearer of the germ and infecting material, these operative procedures facilitate the cleansing which is so essential in treating syphilis, and substitute healthy union for those tough cicatrices which result from the action of the disease.

This is the opening word for an earnest advocacy of local treatment in the earliest stages. Not only the chancre, but the first cutaneous and mucous disorders, he would have treated by direct application of suitable remedies. For the initial lesion, when the knife, the actual cautery, or strong acids cannot be used, carbolic acid of strength suited to the case may be employed, or iodoform, which limits suppuration very efficiently. In cases where there is but slight scaling off of the epidermis, or shallow erosions, the chancre may be treated with mercurial ointment, or painted with a solution of corrosive sublimate in alcohol or ether. Afterward, dry cotton dressings, small and neat, such as we have often seen used with brilliant results in Sigmund's wards, are recommended.

On page 69, the author states that no means are sufficient to prevent the disease, once inoculated, from becoming universal, *excepting* complete extirpation of the initial lesion. Just here we may avail ourselves of the right of individual judgment which he concedes to all, to suggest the possibility that, where this extirpation has seemed to head off constitutional manifestations, there may have been a mistake as to the character of the lesion. It would be hard to prove the contrary, for these manifestations are the only *absolutely infallible* evidence of syphilis.

In regard to *constitutional treatment*, the greatest stress is laid upon cleanliness, hygiene, and general building up. With these, and suitable local treatment, 40 per cent. of syphilitic patients have only very light secondary manifestation; 10 per cent. more have but transitory and inconsequential affections of the skin and fauces, which recover with suitable local treatment; and the proportion of grave secondary forms is no greater than in patients treated constitutionally, no matter how. Other cases owe their severity chiefly to conditions inherent in the patient, and it is to them the physician must direct his attention, combating them, not as parts of, but as co-operating with the syphilis in ravaging the system. When not thus complicated, the most varied forms of syphilis frequently recede spontaneously. In fact, in Sigmund's wards it is taught that syphilis is not only a curable disease, but one tending under favourable circumstances to a spontaneous cure.

This is an idea now familiar to all who have paid special attention to the disease; but it is directly opposed to the views held and taught by some most distinguished physicians.

The best time, then, for instituting constitutional and *specifically anti-syphilitic* treatment is in the second period of the disease, and this only when "several systems or organs are affected, or one very gravely, or when the nutrition or functional activity of the organism is palpably prejudiced by syphilis alone. In every period, however, and for every attack of syphilis, the most scrupulous hygienic and dietetic care, and the simultaneous attention to and appropriate treatment of other complicating constitutional affections are indispensable." This is the key-note of Sigmund's teaching, to which he recurs again and again. Relying upon it, he says, the thoroughly investigating and accurately observant physician will not employ, out of regard for the anxiety of the patient or his own reputation, the so-called humane, and unquestionably shrewd administration of small doses of anti-syphilitic remedies in the earliest periods of the disease.

When, however, such treatment is to be employed, Sigmund recommends for the lighter forms, erythema and papulæ, with general enlargement of the lymphatics, the preparations of iodine; iodide of soda, of potassa, and iodoform, as well as the protiodide of mercury, and, when these cannot be used, inunction of mercurial ointment or subcutaneous injection of corrosive sublimate or the bi-cyanuret of mercury, or small doses of calomel. Of these, unless contraindicated, he prefers the iodine salts. For graver forms, with defective nutrition and strength, palpably due to syphilis alone, or wide-spread, pustular, papular, or squamous eruptions, preparations of mercury must be used. The French teaching that mercury is best suited to secondary, and the iodides to tertiary syphilis, he thinks is unsupported by clinical experience. For the gravest tertiary forms, gummy new formations in the skin, bones, cartilages, and nervous system, mercury must be used and alternated with iodides.

Finally, the author deprecates pushing mercury to the point of salivation. This he holds to be absolutely injurious to the patient and a relic of medical barbarism.

A very interesting part of one of the lectures is devoted to the matter of prophylaxis, personal and general. In regard to the former, Sigmund recommends attention to details of cleanliness, with the use of disinfecting washes for suspicious cavities, and anointing the examining finger with carbolic acid ointment. In regard to public prophylaxis he expresses a strong conviction in favour of daily examination of prostitutes, "for which," he says, "are fitted only physicians who have, united with a thorough knowledge of syphilis, a trustworthy character." The effect of such police regulation he believes to be salutary, protecting the community from disease and prostitutes from bad treatment. In support of this he cites the examples of Italy and Belgium.

If space permitted, there are many other points in these lectures which it would be profitable to consider, and in regard to which the author's views are of the greatest value; but we must content ourselves with strongly advising those who are familiar with the language of the book to read it for themselves. It is something, in addition to the worth of its contents, that its style is transparently earnest and honest, and that, besides containing the formulated opinions of the greatest living syphilographer, it is a most interesting revelation of a man of great experience and intense singleness of purpose. C. W. D.

ART. XXXVII.—*Physiological Therapeutics: A New Theory.* By THOMAS W. POOLE, M.D., M.C.P.S. Ont. 8vo. pp. viii., 220. Toronto: The Toronto News Company, 1879.

THE avowed object of this work is to present "a new theory of the inter-relations of nerve-force and muscular tissue throughout the body, including the relations of nerve and muscle in the coats of the arteries, whereby their calibre is regulated; and of the mode of action of that large class of drugs which operate through the medium of the nervous system." The first two thirds of the book are mainly devoted to physiological considerations, the final third to the *modus operandi* of various drugs which act upon the nervous system, either to excite or depress nerve-force.

The author's argument in a few words may be stated as follows: Muscular fibre possesses an inherent contractile power; this power being inherent in the muscle cannot be derived from the nervous system, *ergo*, the action of nerve upon muscle must be an inhibitory and not a compelling one. From this standpoint all the old landmarks are to be readjusted, electricity no longer produces contraction by stimulating the muscle but by a sedative effect on the nerve; the old vegetable neurotics, as well as our newer acquaintances, are also invited to a similar change of base. The therapeutical results, however, we are pleased to notice, remain as before.

Dr. Poole has with considerable industry collated the views of a number of authorities, and has collected material which, in itself, is interesting and valuable, but clearly inadequate to sustain his theory, which mainly teaches that the vaso-motor nerves exert an inhibitory instead of an exciting influence upon the arterioles. The rearrangement of quotations, necessarily fragmentary, in order to make an author prove what he had no intention of asserting, is a thankless and often a fruitless task. The truth of this is exemplified in the present instance, where Carpenter's Physiology is freely quoted to sustain this view, which is, moreover, abundantly contradicted by facts sufficiently discussed in that work (Am. ed., Philada. 1876, pp. 327, 758, 865, 868, and elsewhere).

The author appears to have been misled by a play upon the word inherent. He says: "It is the object of these pages to show that this property of muscular contractility is capable of manifesting itself *in the absence* of any *special*, *natural*, or artificial stimulant." After quoting lexicographic definitions of the word inherent, he continues: "Now an *inherent* contractile *power*, which is dependent upon some other 'power' for its operation, is an absurdity. A locomotive has not an inherent power of motion. Gunpowder has not an inherent power of explosion. The admission of an inherent contractile power is tantamount to an admission of the ability to use that power. Our physiologists then have entirely mistaken the meaning of the term they freely use, or they admit, *pro tanto*, the claim we put forward for this tissue."

In reply to this, it might with considerable propriety be urged that physiology teaches that protoplasm has several ultimate endowments, among the most prominent of which is irritability, this being manifested to its highest extent in muscle, which is pre-eminently the contractile tissue. Irritability has been defined as "an inherent capability on the part of the cell (protoplasm) of responding to mechanical, chemical, physical, and vital (nervous) stimuli." With this view, which is now generally held, the existence of an inherent contractile power of the muscle protoplasm, is not invalidated by the assumption that it is called into action by some natural or extraneous stimulus, such as nerve-force or electricity. The motor nerves and muscular fibres then are not necessarily natural antagonists, but, like rider and horse, they stand ready to act as coadjutors in carrying out the mandates of a higher power. The opinion that the irritability of muscle protoplasm is an inherent property of muscular tissue, which, by virtue of this endowment, possesses both the power of independent contraction, and of being excited into activity under the spur of some stimulant, agrees perfectly with the results of observation and experiment, and explains the phenomena more satisfactorily than the theory advocated by Dr. Poole. The peculiar views of our author are evidently an amplification of, or generalization from, the exceptional vaso-motor action of the chorda tympani nerve upon the vessels of the submaxillary gland, and the nervi erigentes of the erectile tissue, which appear to act by dilating the vessels, and for which no satisfactory explanation has yet been presented. The view of Schiff that the nerves in these instances exercise a dilating power directly upon the muscular fibre is opposed to all analogy, and has been carefully examined and rejected by Claude Bernard and physiologists generally. Dr. Poole, however, apparently adopts it, and attempts to extend it throughout the entire muscular system.

In perusing this work the reader will be struck with the prominence of one set of phenomena and the systematic oversight of others, which may exert an equal or even greater influence as factors in the problems under discussion. The fact that one remedy may exert a preponderating influence upon the great nerve centres, while another and somewhat similar agent affects the peripheral extremities of the nerves or the ganglionic system mainly, is sometimes lost sight of, while the influence of the cardiac action and varying blood-pressure upon the hæmic condition of the capillaries is often ignored entirely.

The therapeutical teachings of the latter part of the work agree, as a rule, with the latest authorities, which are freely quoted; however, the statement concerning the action of aconite (p. 161) is different from that ordinarily given. Dr. Poole says, "arterial contraction is a prominent feature of aconite-poisoning." This view is not sustained by evidence; on the contrary, the experiments of Achscharumow and Nunnely failed to detect any difference in the calibre of the vessels, and Böhm and Wartmann have shown that "when in aconite-poisoning a galvanic current was applied to the vaso-motor centres in the medulla an immediate rise of arterial pressure took place." We can see no sufficient reason for abandoning the generally accepted idea that aconite has no vaso-motor influence directly, but exerts its action principally upon the heart, lessening the frequency and force of its contractions (thus lowering blood-pressure), and finally causing its arrest in diastole.

With the exception of the manifestly untenable theory—to which Dr. Poole's readers, perhaps, will be inclined to attach less importance than he does himself,—the book is instructive, and, as a whole, abounds in information upon points in physiology and the physiological action of drugs, that show the author to be familiar with his subject, and which cannot fail to be useful. F. W.

ART. XXXVIII.—*Guide to the Examination of Urine, with special reference to the Diseases of the Urinary Apparatus.* By K. B. HOFMANN, Professor at the University of Gratz, and R. ULTZMANN, Docent at the University of Vienna. From the second editon. Translated and edited by F. FORCHHEIMER, M.D., Professor of Medical Chemistry at the Medical College of Ohio, Cincinnati. With illustrations. 8vo. pp. 195. Cincinnati: Peter G. Thomson, 1879.

The same Translated by T. BARTON BRUNE, A.M., M.D., Resident Physician Maryland University Hospital, and H. HOLBROOK CURTIS, Ph.B. 8vo. pp. 269. New York: D. Appleton & Co., 1879.

THE "Anleitung zur Untersuchung des Harnes," of Hofmann and Ultzmann, of which we have here a translation, is a work which in Europe enjoys a merited popularity, and it is abundantly worthy of translation into our own language. With careful and conscientious labour the authors have prepared, as an outcome of a large personal experience and thorough familiarity with the subject, a guide to the analysis of the urine, which deserves a place in the student's library, even in these times when "of making books there is no end."

At the beginning there is a short introductory, running over the history of the subject, after which is given a brief but succinct description of the macroscopical and microscopical structure of the kidneys and urinary passages; then a detailed account of the physical characteristics of the urine and the substances normally and abnormally present in it, including sediments and calculi. Following this are methods for exact quantitative analysis and for approximative analysis, and finally two chapters on diagnosis—the practical application of what precedes them. As a whole, it constitutes a clear and comprehensive system; its descriptions are accurate, its suggestions practical, its inferences reliable. Perhaps a few points might be improved, as for example if the fermentation test for sugar were given, instead of the mistaken remark that it is difficult to carry out. Further, Mulder's test (indigo-carmine oxidation) for sugar might be omitted, for, as we have ascertained by repeated experiments, it is entirely valueless, since the "characteristic" reaction may be obtained in urine in which there is not a trace of sugar. In giving the nitric acid test for albumen the authors adhere to the classic way of "underlaying." Better than this, because more delicate, is the following plan: Put a small quantity of urine in a narrow test-tube, fill a pipette with nitric acid, close the end with a finger, thrust the point quickly to the very bottom of the tube, and allow the acid slowly to descend, and raise the urine upon it. In this way there is no mixture of acid and urine, and a sharply-defined zone of coagulation marks the presence of albumen.

The chapter on concretions is a very useful one, giving a description of their formation, growth, metamorphoses, and how to analyze them. In this we have presented the view so ably supported by Ultzmann, that almost all calculi have a uric acid nucleus, and originate in the kidneys, other kinds being exceptional.

It is certainly complimentary to the authors of this work that, at about the same time, two translations should appear in America; but it is unfortunate that one should be made by a German who does not seem to have a good command of English, and the other by Americans who are not quite at home with German. We trust that, in justice to the authors, the translators will speedily revise their works, and remove the numerous errors and literary blemishes, which render the English versions unworthy of the excellent original, and in many places misleading to the student who may consult their pages. C. W. D.

ART. XXXIX.—*A System of Midwifery, including the Diseases of Pregnancy and the Puerperal State.* By WILLIAM LEISHMAN, M.D., Regius Professor of Midwifery in the University of Glasgow, etc. etc. Third American edition, revised by the author. With additions by JOHN S. PARRY, M.D. With 200 illustrations. 8vo. pp. 732. Philadelphia: Henry C. Lea, 1879.

THE death of the lamented Dr. Parry placed the preparation of this third American edition in the hands of another, and the volume, in consequence of his supervision, has lost sixteen of the thirty-two pages added by the former editor. The portions retained are: Dr. Parry's remarks on extra-uterine pregnancy; Credé's method of delivering the placenta; the use of the hand in occipito-posterior positions; the Thomas method of replacing an inverted uterus; the forceps as used in the United States; the management of the funis; and venesection in puerperal peritonitis.

Among the erased portions are the chapter by Dr. Parry on Diphtheria of Puerperal Wounds; an article on the early and frequent use of the forceps in the United States; another on concealed accidental hemorrhage, etc. The whole work, by erasures, emendations, and condensation of plates, has been reduced some thirty-four pages, eighteen of these by the author. The article on the Cæsarean operation in the United States was also left out, which was well, as the record was entirely out of date, four years having nearly doubled the number of cases.

We notice that the author adheres to the old term of "hysterotomy" for the Cæsarean section, instead of that devised by Prof. Gardien, in 1816, of "Gastro-hysterotomy," the vaginal section of the cervix having the simple term "hysterotomy," which we think a good distinction. We are rather surprised to find the author, who is no friend to the uterine suture, giving a preference for the generally discarded and condemned carbolized catgut. Not a word is said of the much-extolled and oft-repeated Porro operation, which has met with such success on the Continent. In describing Laparo-elytrotomy, he falls into the common error in believing that the safety of the operation lies in avoiding the opening of the peritoneal cavity, when it is really in the fact that the uterus is not incised. As Keith, of Edinburgh, has opened sixty abdominal cavities in succession and removed as many ovarian cysts, with a loss of but two cases, it cannot be so very dangerous to open the peritoneal cavity; the danger must lie elsewhere.

Dr. Parry's article on the forceps does not fully represent the views of the medical schools here, as it leans very decidedly toward European instruments and usages, although teaching the dorsal decubitus in their application. In some parts of the United States, where the teachings of Hodge and Meigs are not followed, this will perhaps be esteemed an advantage and serve to recommend the volume as a text-book.

Prof. Leishman makes but four positions of the vertex, while our teachers usually present six, which makes some confusion, as the third of Leishman is our fourth, and his fourth our fifth. Dr. Parry explained this in brackets, but these are not in the new edition. The third and sixth positions are very rare; but the sixth has points of interest and danger which require special attention.

As a British work upon obstetrics, Prof. Leishman's stands deservedly high, and has been well received in the United States, where almost all our obstetrical treatises are of foreign authorship. For some reason, best known to themselves, our obstetrical professors very rarely write works on midwifery. We have a number who have distinguished themselves as authors of gynæcological works, but it is rare to find one willing to write a midwifery text-book; so we are obliged to use in order the works of Velpeau, Moreau, Blundell, Ramsbotham, Churchill, Cazeaux, Playfair, etc., with additions of text to suit the views of our non-writing teachers. It is many years now since we have had an American treatise on Obstetrics. Is it not time to look for another?

The book of Prof. Leishman is a creditable specimen of the work of its publisher. R. P. H.

ART. XL.—*Eyeball-Tension; its Effects on the Sight and its Treatment.* By W. SPENCER WATSON, F.R.C.S. Eng., Senior Surgeon to the Royal South London Ophthalmic Hospital, etc. 8vo. pp. 70. London: H. K. Lewis, 1879.

THE author uses the term "eyeball-tension" in discussing the condition known as glaucoma, and thinks that the latter name will "pass into the same gulf of oblivion into which 'amaurosis,' 'hebitudo visus,' 'amblyopia,' and similar terms are gradually falling." This is certainly a consummation devoutly to be wished for; but these abandoned terms have yielded to a more accurate knowledge of the pathological conditions to which they were applied, and, as the time for this has hardly yet come in the case of glaucoma, this vague but universal term may perhaps, for the present, do as well as another to indicate the vagueness of our knowledge.

It must be admitted that glaucoma is one of the most serious obstacles in the way of the claims of ophthalmic surgery to the position of something like an exact science. The increasing number of elaborate discussions learnedly advocating various theories make, at least, one point clear —that the pathology of the disease is still an open question. Even its treatment, though to a great extent successful, rests altogether on an empirical basis, and most ophthalmic surgeons of the present day will be ready to say with Mauthner, "I know just as little of the cause of glaucoma as of the foundation for its operative cure."

Iridectomy, after twenty years of comparatively undisturbed possession of the field, has of late been meeting with something of a reaction; its failures have been chronicled and its misfortunes paraded, and rivals, with more or less powerful backing, have been raised up against it in the form of sclerotomy, ciliary myotomy, seton, trephining, etc.

The elucidation of this obscure and important subject may well claim the best knowledge and experience in the ranks of ophthalmic surgery, and this little book in which Mr. Watson records his views, though it contains nothing new, is a useful contribution.

Glaucoma is rapidly accumulating a literature of its own too volumnious for any but the specialist to attack, and many whose interest in the subject is more general will be glad to find here a concise and authoritative summary.

Of the inflammatory, neuropathic, and mechanical theories of glaucomatic tension, the author prefers a modified mechanical theory, according to which an abnormal rigidity of the sclerotic and the loss of distensibility of the lamina cribrosa are predisposing causes. If, when these causes exist, there is an increase in the contents of the ball, tension must result. The causes of such increase, he thinks, are either hypersecretion of the vitreous or obstruction of the outlets of the venous or lymphatic channels in the region of Schlemm's canal and Fontana's space, and in the posterior pole of the eye. He is a believer in the "filtration cicatrix," of De Wecker, following the incision in iridectomy or sclerotomy. Concerning this Schweigger says, "As I have convinced myself by anatomical researches, these wounds, when running a normal course, do not at all heal by the interposition of a new-formed tissue, but by direct union. Besides that, we do not look upon common cicatrices as more elastic, but as less so than normal tissues." Schnabel also examined a number of eyes in which iridectomies had been performed, and found the cicatrices decidedly firmer than the neighbouring tissue, and asserts that the "scleral cicatrix possesses no peculiarity of structure by which its imputed function as a filtrative tissue could be accounted for."

Mr. Watson admits the influence of inflammation as a cause of glaucomatic tension in some cases, as those consecutive to iridochoroiditis, serous iritis, or sclero-choroiditis.

As to treatment, the author gives a general preference to iridectomy, but prefers sclerotomy in certain cases, as when atrophy of the iris in absolute glaucoma makes iridectomy more difficult and dangerous of performance, when the use of an anæsthetic is inadmissible, and in all cases of glaucoma with total loss of vision, where the object is only to relieve pain. He thinks there is less danger of intraocular hemorrhage in sclerotomy than in iridectomy. The credit of originating sclerotomy is accorded to Quaglino, Mauthner, and De Wecker, and the following directions are given for the performance of the operation:—

> "A narrow Gräfe's cataract knife is made to penetrate the sclerotic about one line from the apparent corneal margin, and carried across the anterior chamber at right angles to the vertical diameter of the cornea, at a level with its upper or lower sixth. The knife, skirting the extreme upper margin of the anterior cham-

ber, emerges at a point exactly opposite the point of entrance. The edge of the blade is then made to cut its way through the sclerotic (keeping the blade parallel with the plane of the iris) until it is evident through the superjacent conjunctiva. This latter membrane is left undivided, and the knife slowly withdrawn from the wound.''

This is not the operation of De Wecker, but, except that the incision is much smaller and more anterior, is the same as that performed by Bader, which Mauthner speaks of as a "sort of monstrosity." Mauthner performs substantially the same operation as De Wecker, whose procedure is as follows: "Make the incision with Graefe's knife as if you were planning an upward flap of 2 mm. After complete counter-puncture continue the incision until two-thirds of the section are made. Before withdrawing the knife, lift the wounds open by bending the edge of the knife slightly forward, and so let the aqueous escape slowly. When the pupil has at last contracted, after the escape of the aqueous, and the iris lies in contact with the cornea, the knife is to be withdrawn very cautiously from the wound." A great point is made of not completing the incision, but leaving a bridge of sclerotic. Even with this precaution De Wecker recommends the operation in hemorrhagic or absolute glaucoma only, because of the danger of incarceration of the iris in the wound.

Mr. Watson's experience fully confirms the views of Schweigger and others as to the effect of eserine in temporarily relieving the symptoms of glaucoma.

An analysis of 46 cases of glaucoma is given in the last chapter.

G. C. H.

ART. XLI. — *Spermatorrhœa: Its Causes, Symptoms, Results, and Treatment.* By ROBERTS BARTHOLOW, A.M., M.D., Professor of the Theory and Practice of Medicine in the Medical College of Ohio, etc. Fourth edition, revised. 8vo. pp. viii., 128. New York: William Wood & Co., 1879.

THE monograph of Professor Bartholow is too well known from the successive editions in which it has come before the profession to require more than a passing notice. The reputation of its distinguished author is sufficient to create a demand for any work to which he puts his name, and that this work fills an important niche in medical literature is well evidenced by the continuance of the demand.

It is a matter of interest to the curious to observe the gradation by which some standard work grows from its almost embryonic condition as an ephemeral lecture, or magazine article, until it reaches the adult position of a finished monograph. This process is made apparent in the present case by the four prefaces to successive editions which are preserved in this one. Dr. Bartholow has achieved many triumphs, and may regard this brochure as one of the most insignificant among them, but we cannot but think that the man who has written one book, upon which the public has placed the seal of its approval, has good grounds for self-gratulation.

The opinion entertained by Dr. Bartholow is that spermatorrhœa is purely and entirely a neurosis, and he defends the opinion by many observed cases and sound arguments, and in the opinion of the writer his position is unassailable. In accordance with this position the views of Lallemand,

and the heroic plan of treatment which he did so much to introduce, are very properly condemned by Dr. Bartholow, and we think he might have spoken against the use of the "porte caustique" in even more vigorous terms than he has, and yet not have gone one step too far. The application of solid nitrate of silver to the prostatic urethra, to cure a condition of the mucous membrane which has never been demonstrated to exist, is a measure filled with danger to the patient, and utterly unscientific. We cannot even agree with Dr. Bartholow in thinking that we may occasionally resort to the practice for its moral effect; the surgeon has no right with such an end in view to adopt a course of treatment, which while often harmless, may sometimes, and despite all precautions, be followed by disastrous results. It would seem to be much better, where a moral effect is aimed at, to apply counter-irritants to the perineum, or if they were not thought sufficiently severe, tartar emetic ointment or a moxa applied to some safe part would probably be found to fulfil this last indication.

Dr. Bartholow's book has now for a long time been the best known and most read of any work upon the subject of which it treats. It is very handsomely gotten up, well printed, with wide margins, upon heavy paper, and is free from typographical errors. S. A.

Art. XLII.—*Drei Fälle von Pneumopericardie.* Von Dr. Herman Müller, Privatdocent und Secundararzt der med. Klinik in Zurich. *Deutsches Archiv für Klinische Medicin.* Bd. xxiv. Heft. 2. Ss. 158–174. Leipzig, 1879.

Three Cases of Pneumopericardium. By Dr. Herman Müller.

In this very interesting paper, which appears in the pages of the *Deutsches Archiv*, Dr. Müller records three cases of pneumopericardium with recovery. One occurred in the clinic of Prof. Huguenin, and arose from a hitherto unobserved cause, namely rupture of purulent pericardial exudation into the lung; the two other cases occurred in the wards of Prof. Rose, and were of traumatic origin.

As but little is known of the clinical history of this rare affection, we present a summary of the records of these cases, and of Dr. Müller's comments on the lesion.

Case I. H. J., aged 34, was admitted to the clinic May 19, 1876. Four weeks previously, he had been suddenly seized with intense sense of constriction with stabbing pains on his left side, and fever. Severe cough soon followed, with viscid brick-red sputa. Cough, constriction, and severe pyrexia continued for about ten days. Convalescence was slow. Meanwhile there was severe pain in thorax and almost constant palpitation of the heart. This condition became worse, and he was finally sent to the hospital.

Condition on admission: Moderate fever, 101.6° F., with a small pulse of 108–132. Face livid; marked objective, but no subjective, dyspnœa. Respirations 28. Cardiac movements perceptible to the touch over a moderate area; no distinct heart shock, no pericardial friction. The relative cardiac dulness extended to the upper border of the second rib, 4 cm. beyond the line of the nipple on the left, and beyond the sternum quite as far to the right. Below, and to the left side, the dulness abutted against an exudation into the left pleura, which extended posteriorly beyond the middle of the scapula. On auscultation two soft, dull cardiac tones were heard as from a great depth; while the second pulmonic tone appeared strengthened, and accentuated. There was no pericardial friction sound, and no endocardial murmur. There was bronchial respiration behind, to the left, and below; and the respiratory murmur was absent on the left side in the region of dulness. There was no expectoration.

Three days later, severe fever came on with a pulse reaching 156, and with intense dyspnœa; the patient began to cough violently, and in a short time expectorated considerable purulent matter. In the evening pericardial friction was heard at the apex for the first time, and became more marked the day following. The level of the pleural exudation had changed but little. The temperature had risen to 105.4° F. The dyspnœa had increased. The cardiac dulness began at the upper border of the second rib, and extended to the right of the sternal line. The borders of both lungs were shoved aside. The diagnosis then was pericarditis, and empyema of the left side with rupture into the lung. There were no signs of pneumothorax.

Improvement gradually ensued, and the temperature became normal; but the pulse remained small and frequent. The pleural exudation showed no change, but the purulent exudation diminished. On the morning of the twentieth day, however, such remarkable and unmistakable auscultatory phenomena were presented that it was evident that pneumopericardium had become established overnight. There was headache, and complaint of oppression in breathing which had not been present for some days. There was restlessness at night, and disturbed sleep. In the morning the countenance was more livid. Respiration and heart-action agitated, pulse more feeble, patient restless and anxious. There was no pain in the chest, but there was great complaint of oppression and discomfort.

On percussion, the lower border of the right lung was at the lower border of the sixth rib, somewhat shoved off near the sternum; while the course of the left lower border was tolerably normal above, and merged into the dulness on the left side. The relative cardiac dulness was less than before. It divided the left nipple, and extended a thumb's breadth beyond the sternum on the right. The lower border of the heart was at the seventh rib. Behind, there was a slight difference under the spines of the scapulæ, the left side being the duller, with increased dulness below. There was a clear sound at the inferior angle of the scapula; and compression-respiration only at the lowermost portion.

The auscultatory phenomena were very remarkable. The cardiac tones were exceedingly resonant, and there was a splashing as of fluid in movement; a noise as though air-bubbles were rising in a fluid and bursting on its surface. At intervals, in addition, a sound often occurred as though air was being driven through a small orifice. There could be no doubt that these sounds came from a cavity in which air and fluid were shaken together by the movements of the heart.

The characteristic percussion sound of pneumopericardiac tympanites was not present. This, however, is not an absolute requirement, as adhesion of the pericardium to the anterior wall can prevent ascent of the air-bubbles. The accumulation of air was not great, as the extent of cardiac dulness had diminished but little; and the subjective manifestations were not intense.

The treatment, directed to avoidance of increase in accumulation of air, consisted in rest, subduing the disposition to cough by narcotic remedies, and applications of ice to the cardiac region. The physical phenomena remained undisturbed during the day, and there was no indication of pneumothorax. The evening temperature was 99.4° F.; the pulse 104, small and weak.

On the following day the metallic cardiac sounds were no longer audible, and there was no fever. During the fourth and fifth days, the special phenomena recurred for twenty-four hours; only the splashing was not so extensive, the metallic ring of the heart-sounds predominating. The pericardio-pneumonic fistula had opened again, and allowed air to penetrate the pericardium. These manifestations subsided again, and convalescence ensued.

Ten days after the subsidence of the special phenomena, a puncture was made into the pleural sac, and some clear serous fluid expelled; indicating that no purulent pleural exudation had ruptured into the lung as had previously been supposed; but that the rupture had proceeded from a purulent pericardial exudation, and that a pericardio-pneumonic fistula must have been produced in this manner.

One month later the patient was discharged, cured. There were no longer any evidences of pleural exudation. There were no abnormal objective phenomena. The patient complained of palpitation and oppression on exertion.

One year later, he was ruddy and well nourished, but complained occasionally of palpitation and oppression. Apart from a moderate general augmentation of cardiac dulness, there was absolutely no abnormality.

CASE II.—A stone-cutter, aged 28, was admitted November 7, 1875. Two days previously he had been crushed between two heavy stones, so that his shoulders had been pressed in contact. There was fracture of the acromial ends of both clavicles; and of the fifth and sixth ribs, in the vicinity of the heart. Respiration was laboured, and 36; pulse 120; temperature 101.1°. Painful, dyspnœic countenance, marked lividity. The left thorax was the more prominent. There was cutaneous emphysema in the left side, extending from the cardiac region to the axilla, but not over the heart itself.

Percussion over the heart was tympanitic. On auscultation there was a loud, metallic ringing, bubbling sound, synchronous with the movements of the heart. There was no sign of pneumothorax. There was a collection of moist râles on the left side. Examination posteriorly was purposely omitted.

Treatment.—Absolute rest, written communication, ice-bags, rigid diet, morphia.

The general condition was so poor that the prognosis appeared grave enough to elicit the remark that death might be expected over-night. The patient was very restless during the night, suffered much from dyspnœa, and complained greatly of thirst. On the morning following, however, the cardiac splashing sounds were no longer audible. The improvement was continuous, and the patient was discharged, cured, on the seventy-fourth day.

CASE III.—A locksmith, aged 21, received a knife wound in the left breast the night before admission.

The diagnosis was made of wound of lung and heart, with pneumopericardium. The lips and cheeks were blue, the pallor indicating great loss of blood. The countenance was anxious, and there was dyspnœa. About 5 centimeters above the left nipple, a little to the inner side of the mammillary line, was a stab-wound, the exact size and cause of which was concealed by reason of its being sewed up and being covered with congealed blood almost to its border. Emphysema was evident, on palpation, to the extent of the palm of a child's hand. Respiration was 24, and quiet; pulse 84; temperature 99.3° F. Vesicular respiration existed over the entire right lung. Respiration was very feeble at the lower portion of the left lung, anteriorly and laterally, with a few fine moist râles here and there. Pneumothorax was positively excluded from the diagnosis. Over the normal region of cardiac dulness there was clear tympanitic resonance, extending from the inner side of the nipple to the left border of the sternum. This tympanitic region did not fully coincide with that of the cutaneous emphysema; the latter being further upward. The movements of the heart were feebly sensible to touch and sight; the apex-beat was directly below the nipple. Over the entire heart, on auscultation, and towards the apex, most intensely, loud, splashing, succussion sounds were heard synchronous with the movements of the heart, and independent of those of respiration. The cardiac sound was metallic, and almost masked by the loud, gurgling sounds. There were no hemorrhagic sputa. There was no pain in the cardiac region.

Treatment.—Absolute rest; communication by writing, and by the bell; ice-bladders to the cardiac region; fluid nourishment; fifteen drops, hourly, of a solution of muriate of morphia in cherry-laurel water, 10 parts to 200.

In a few hours the abnormal cardiac sounds and the tympanites had greatly diminished. The patient did well, notwithstanding some exudation into the pleura on the third day. The sutures were removed on the eleventh day, and the wound was then seen to be located directly over the third rib, somewhat within the line of the nipple, coursing somewhat obliquely into a breadth of 2 centimeters. The wound was healed by the twenty-first day. On the twenty-fifth day the cardiac dulness was much augmented. The old sounds were audible at the base. The patient was raised in bed for the first time, and the back examined. The exudation reached the middle of the scapula. Occluded respiration was heard below. Eighteen days later the patient essayed to walk, but was compelled to desist on account of oppression and palpitation. The exudation remained. The cardiac dulness was moderately increased. There was a rough systolic murmur at the base of the heart, but without any pericardial character about it. The respiration of the pleural exudation was very slow. There was palpitation from time to time, despite repose in bed. The cardiac dulness diminished gradually, and the pleural exudation became absorbed. On the fifty-fifth day the patient left the hospital without the knowledge of his medical attendant.

In the last two cases, the metallic splashing sounds and the tympanites in the cardiac region ceased within twelve hours after the admission of the patients into the hospital. Whether the heart had been wounded, as well as the lungs and pericardium, could not be determined. Both cases were treated just as though the heart had been wounded. No attempt was made to determine whether the auscultatory and percussory phenomena underwent change in the sitting and recumbent position respectively, on the score of prudence as to the welfare of the patient.

The special points adduced by Dr. Müller on the lesion of pneumopericardium may be presented as follows:—

As to the manner in which air gains access to the pericardium, but three modes have been positively recognized. Traumatic openings are the most frequent. They have occured in different ways. Knife-wounds were the cause, according to Müller, in cases reported by Baum (Krause[1]), Feine,[2] Grüttner,[3] Richet,[4] Dolbeau,[5] and in the third case recorded above. Then there is the case of Aran,[6] in which the air penetrated during injection after paracentesis of the pericardium, though it disappeared within a few hours. Bodenheimer[7] has described a case in which air penetrated the almost closed sinus of a perforating gunshot wound of the pericardium on the fourteenth day; apparently from effort in repeatedly rising to relieve a diarrhœa.[8] In the case of Thompson and Walshe, the pericardium was penetrated from the œsophagus by a swallowed knife. A similar case was that of Buist,[9] in which an artificial denture opened the pericardium through the œsophagus. Morel-Lavallée[10] reports two cases of pneumothorax and pneumopericardium as a result of simultaneous rupture of the pericardium and tearing of the lung by severe concussion, without fracture of the thorax; and the same observer has recently reported a third case, in which impalement of lung and pericardium by a fractured rib was the source of the pneumopericardium. The second case of the present series is but the second one known as occurring in this manner. Both of these cases terminated in recovery.

The next most frequent cause of the lesion is ulcerative perforation of the pericardium from within or from without; the pericardium becoming adherent to adjacent parts in consequence of lesions in them. In the majority of instances the perforation has been from without. Thus Chambers[1] and Tütel[2] have seen pneumopericardium follow perforation in œsophageal carcinomas. Eisenlohr[3] has seen it to occur from pyo-pneumothorax; Saexinger[4] from ulceration of the stomach and perforation of the diaphragm; Graves[5] describes a case of pyo-pneumopericardium from hepatic abscess communicating with both pericardium and stomach; and McDowel[6] one in which the lesion followed rupture of a pulmonary cavity.

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[1] Das Empyem. und seine Heilung, Danzig, 1843, p. 190.

[2] Dissert. inaug. pericardii læsi, etc., Leipzig, 1854.

[3] Deutsche Klinik, Oct. 7, 1865.

[4] Wunder des Herzens und des Hertzbeutels (Fall 175), Langenbeck's Arch. f. Klin. Chir., ix. Bd. 1, H. 1867.

[5] Ibid. (Fall 216).

[6] Friedreich, Krankheiten des Herzens, p. 268.

[7] Berlin. Klin. Woch., 1865, No. 35.

[8] A Practical Treatise on the Diseases of the Lungs, Heart, and Aorta, London, 1854, pp. 201 and 627.

[9] Charleston Med. Journal, Jan. 1858.

[10] Rupture du péricarde, etc., Gaz. Méd. de Paris, 1864, Nos. 46, 48, 51, and 53.

That perforation of the pericardium may ensue from purulent accumulations making their way from within outwards, and thus occasion the access of air into the cardiac sac, is proven by the case of O. Wyss,[7] in which the perforation of the pericardial exudation took place through the thoracic wall, and in the first case of the present series, in which the perforation took place into the lung. Wyss mentions two cases from Sabatier and Fabricius, similar to his own; but Dr. Müller has been unable to find any record analogous to his first case, above alluded to. He mentions, however, a case seen by him in Prof. Huguenin's clinic, in February, 1876. An examination was made on the body of a man, 50 years of age, dead from pericarditis and empyema of the left side. The pericardial sac communicated at the lowest part of its left side with the pleural sac, by means of an opening the size of a thaler. Nothing to indicate this condition had been detected during the short time he had been under clinical observation. The dilatation of the pericardium, however, rendered it probable that that structure had been penetrated from within and not from without.[8]

The third mode of origin of pneumopericardium is the spontaneous development of gas from ichorous decomposition of an exudation. Without participation in the controversy as to the possibility of such gaseous development, it is simply stated that there has been no other mode of accounting for the lesion in several carefully examined instances. Some older cases, those of Morgagni, Laennec, Senac, Houlier, and others, challenge sharp criticism for want of completeness of detail. Some more modern cases, too, those of Brichetau,[9] Stokes,[10] Sorauer,[11] Friedreich,[12] and Duchek,[13] are not deemed quite beyond doubt. The very recovery of the two cases cited by Stokes and Sorauer is considered as an argument against the asserted cause of their origin, inasmuch as that result could hardly be anticipated after ichorous decomposition of the exudation.

Dr. Fetzer[14] has published a case of pneumopericardium differing in origin from any of the three modes mentioned, and which he attributes to exhalation of gas from septicæmic blood, but which gave nearly negative results on the post-mortem examination—a few air-bubbles escaping on puncture of the pericardium, without any further evidence of air on opening the sac, which contained but a small quantity of serous fluid. Dr. Fetzer's diagnosis was based on certain physical signs present in his patient a few hours before death; signs which are identical with phenomena derivable from the stomach,[1] and thus liable to mislead the diagnosis.

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[1] London Journ. of Med., July, 1852, p. 606.

[2] Deutsche Klinik, 1860, No. 37.

[3] De pneumopericardio addita morbi historia. Diss. Inaug. Greifswald, 1860.

[4] Prager, Med. Woch., 1865.

[5] Clinical Medicine, 1843. Stokes, Diseases of the Heart, p. 23.

[6] Stokes, op. cit.

[7] De fistula pericardii commentatio, Breslau, 1866.

[8] Dr. Müller does not appear to have been aware of the unique case reported by Dr. J. Forsyth Meigs in the *American Journal of the Medical Sciences* for January, 1875, p. 81. In this instance a perforation was detected in the œsophagus, and the conclusion arrived at was that it had occurred from within outwards, the result of an effort of nature to evacuate the diseased contents of the pericardium, as happens in the case of empyema when the latter is cured by natural processes. The reader will find a number of references and much valuable comment in this literary contribution from Dr. Meigs.

[9] Arch. Gén. de Méd., t. iv. 1844, p. 334.

[10] Op. cit.

[11] De hydro-pneumopericardio. Dissert., Berlin, 1858.

[12] Herzkrankheiten, 1859, p. 266.

[13] Krankheiten des Herzens, Herzbeutels und der Arterien, Bd. i. p. 56.

[14] Würtemberger medicinisches Correspondenzblatt, 1874.

In concluding his remarks, Dr. Müller thinks most writers indicate a too unfavourable prognosis. Of twenty-eight cases collected by him, one-half of which were of traumatic origin, nine terminated in recovery, six of these being traumatic cases. Of all the cases, eight in number, due to ulcerative perforation, only one terminated in recovery; but nearly all of them were due to some constitutional malady in itself of gloomy prognosis.

J. S. C.

ART. XLIII.—*Holden's Manual of the Dissection of the Human Body.* Edited by LUTHER HOLDEN, President of the Royal College of Surgeons, etc., and JOHN LANGTON, F.R.C.S., Assistant Surgeon and Lecturer on Anatomy at St. Bartholomew's Hospital. Illustrated with numerous wood engravings. Fourth edition. 8vo. pp. 692. Philadelphia: Lindsay & Blakiston, 1879.

WITHIN a few years many manuals of dissecting have been published, which are gems compared with the "Dublin Dissector" and the other companions of a former generation of students. The work before us is a brilliant example of the new order of text-books. How imperfect and plain the old volumes appear, what daubs of printer's ink the wood-cuts are when placed by the side of such illustrations as are now commonly seen. Perhaps no one has had more to do with the introduction of demonstrative illustrations in anatomical books than Mr. Holden. All know Holden's Osteology, written more than twenty years ago, when the author was Demonstrator of Anatomy at St. Bartholomew's Hospital. Now he appears as one of the editors of the fourth edition of his own "Manual of Dissection," which is probably familiar to many readers of this Journal.

In appearance the volume is much like former editions, but it has been carefully revised and enlarged. The different regions are discussed with a clearness and conciseness that is very attractive. The arrangement, however, might perhaps be improved, for the dissection of the tongue, orbit, and nose would naturally be made at the same time with the face and temporal regions; yet these sections are separated by an account of the heart and lungs. The description of the difficult regions, such as the perineum, is clear, and yet sufficiently brief to avoid confusion.

We would call special attention to the character of the illustrations, with which the volume is bountifully furnished. In many books of this kind the cuts are too elaborate, and thus obscure facts and befog the mind of the beginner. Here there are introduced many plans and diagrams, which simplify the subject, and enable the student to fix the important points indelibly in his memory. Diagrammatic drawings, such as a lecturer makes upon a blackboard before the very eyes of his class, are far better for instruction than the most artistic paintings of the experienced anatomical artist. This principle has been recognized by the editors, who have given many plans of arterial branches and anastomoses, and of nerve distributions.

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[1] The writer has heard of one supposed case of pneumopericardium, occurring in Philadelphia, in which the consultant deemed the symptoms due to air in a dilated stomach rather than to the presence of air in the pericardium.

Attention is called in the foot-notes to many anomalies. This is a valuable appendix, for the writer has often seen a student completely baffled by meeting a simple anomaly, the existence of which was unknown to him. A line at the bottom of the page of his Dissector would have cleared away the mist that obscured the vision of the troubled tyro.

The real worth of the volume demands for it a long description, but the well-known character of three previous editions renders a multiplication of complimentary adjectives unnecessary. J. B. R.

Art. XLIV.—*Health Primers.* 16mo. New York: D. Appleton & Co., 1879.

1. *Exercise and Training.* By C. H. Ralfe, M.D. Pp. 96.
2. *Alcohol; its Use and Abuse.* By W. S. Greenfield, M.D. Pp. 95.
3. *The House and its Surroundings.* Pp. 96.
4. *Premature Death; its Promotion or Prevention.* Pp. 94.

The plan of this series embraces a somewhat extensive scope. Four neat little volumes in green cloth are now before us. The first, by C. H. Ralfe, M.D., is upon "Exercise and Training." Some dozen more numbers are announced, as included in the plan of the complete work. The separate tracts are by different authors, supposed to be especially qualified for their tasks.

The author of the first primer warns his readers, very justly, against the dangerous consequences of too abrupt passage from sedentary pursuits to a life of severe physical exertion. As when, too often, an overworked merchant or lawyer abandons his desk, and without the slightest preparation, takes no climbing Alpine heights, or tramping for many hours daily over Scottish moors.

The portion of the volume devoted to "training" brings both commonsense and professional sagacity to bear on this much misunderstood subject. Variety in diet and exercise, and the necessity for careful attention to the respiratory function in its relation to heart-action, are especially insisted on. When exercise and training are progressive and proper, the author does not believe that healthy young men are injured by indulgence in the ordinary athletic sports. But when any man undertakes extraordinary exertion without due preparation, or when a man past forty attempts some feat requiring great outlay of vital power, the case is quite different. Almost inevitable injury and danger attend the latter conditions.

Of the second of these little works, upon "Alcohol; its Use and Abuse," it will perhaps suffice if we say that the author takes a moderate and sensible view of the whole matter. He fully believes in the therapeutic virtues of the drug, and allows that in certain circumstances small amounts may be taken without harm, or even with apparent benefit. Practically, however, he would strictly limit its use to the discreet prescription of the physician.

One point he makes, however, though more pertinent to English readers than American, is the absurdity of the ideas of "monthly nurses," who insist that free stimulation is not only proper but necessary to the nursing mothers under their charge.

The third primer deals with "The House and its Surroundings." Soil, situation, and construction, together with drainage, water supply, and ventilation, are successively treated in a plain and sensible way. We find, what is often lacking, attention to practical details. Closets, sinks, urinals, dust-bins, and the disposal of slops, are carefully and sagaciously treated. The need of ventilated space under the floors, and of double walls, is emphatically stated. Drain pipes, we are told, should be so contrived as not to run under the house. Traps, to drain and sewer pipes, are regarded with distrust, unless there be also free ventilation of the pipes.

In treating of ventilation we are very glad to see proper weight given to the devitalizing and poisonous influence exerted by lamps and gas-burners in close rooms. We think this matter is seldom sufficiently regarded. For the disposal of fecal matter, pail-closets, earth-closets, and charcoal-closets are spoken of with favour. Nevertheless, a well-arranged water-closet is regarded as usually the best device. Wall-papers, carpets, curtains, hangings, etc., come in for well-merited condemnation. Hints here given as to management of the quarters devoted to the children, and also as to the necessity of personal understanding and inspection of all the hygienic machinery of the house, are admirably adapted to their purpose.

Under the somewhat sensational title of "Premature Death; its Promotion or Prevention," are considered the causes which interfere with the prolongation of life until the event usually termed "dying of old age." Statistics are adduced to show how very large a proportion of deaths are from diseases usually classed as "preventable." The causes of such deaths, the conditions under which they operate, and the means of prevention, are treated in successive chapters. Infancy, we are told, suffers especially from brain-disease, lung troubles, and bowel-complaints. A little later, the infectious fevers hold the chief place, followed by the lung and bowel troubles as before. Then phthisis comes to the front rank, during youth and early manhood, while the infectious diseases take the second place. In middle life, while phthisis continues a prominent cause of death, diseases of the brain, heart, digestive organs, and cancerous affections become more prominent, while the infectious diseases sink to a very small amount. Still later, "diseases of local origin" become yet more efficient as death-producers. B. L. R.

ART. XLV.—*Clinical Remarks on Gleet, its Causes and Treatment.* By J. C. OGILVIE WILL, M.D., Surgeon to the Aberdeen Royal Infirmary, etc. 8vo. pp. 31. London: J. & A. Churchill, 1879.

THIS little volume of thirty-one pages is a modified reprint, from the *Edinburgh Medical Journal*, of a clinical lecture delivered in the Aberdeen Royal Infirmary. In it the author quotes from American specialists, particularly Otis, whose ideas in regard to the detection of urethral stricture he has adopted, and whose instruments are figured, with some others, in a good lithographic plate. In regard to diagnosticating the cause and determining the exact seat of the disease, he is clear and safe in his counsel. The same may be said of the treatment recommended, which is drawn chiefly from American authorities. Stress is laid upon the need of general tonics and local hygiene, and the reader properly dissuaded from the heroic method of blistering the penis advised by Milton. His comment upon Otis's rule for the relative calibre of the urethra to the circumference of the flaccid penis is: "It would be well that you should also bear in mind Otis's conclusion, to this extent, at any rate, viz., that if the penis be large, the urethra may, and probably will, bear a proportionate size, for this may guide you aright while it cannot possibly mislead you."

As a whole this brochure may be warmly recommended to the student or the busy practitioner. C. W. D.

ART. XLVI.—*Diseases of Women.* By LAWSON TAIT, F.R.C.S., Surgeon to Birmingham Hospital for Women; Fellow of the Obstetrical Societies of London, Dublin, and Edinburg, etc. etc. Second edition. 8vo. pp. 192. New York: Wm. Wood & Co., 1879.

OF the many gynæcological works produced within a few years, this strikes us as one of the very best. Mr. Tait has given us the benefit of his own experience in a very readable book, and upon a variety of subjects connected with the female sexual system, external and internal. The first thirty-three pages upon the numerous maladies of the external genitals and adjacent parts, are of very great value, evincing a closeness of observation on the part of the author, and giving the reader the benefit of a wide and varied experience in topical and constitutional medication; showing to the student the remedies most likely to cure or benefit, as the case may be. There is nothing of the compilative and very little of the speculative character in the book, which is chiefly valuable for its clinical instruction. The true character of female diseases, and the best modes of treatment, as learned by observation in numerous cases, are what we are taught by Mr. Tait, in plain and pleasing language.

We have only one objection to note in the volume, and that is the size of the type. Had the publisher made it some fifty pages larger, the comfort in reading to many eyes would have much more than outweighed the difference of cost. The value of the matter contained ought to place the work in the hands of a large number of readers. R. P. H.

ART. XLVII.—*A Text-Book of Physiology.* By M. FOSTER, M.A., M.D., F.R.S., Prælector in Physiology and Fellow of Trinity College, Cambridge. Third Edition, Revised. 8vo. pp. 720. London: Macmillan & Co., 1879.

BUT a short while ago (July, 1877) it was our pleasant privilege to call the attention of the readers of this Journal to Foster's Text-Book of Physiology. In less than three years from the date of publication we find the third edition upon our table, revised and enlarged by some one hundred and sixty pages of new matter. This fact is in itself sufficient proof that Dr. Foster's work has been stamped with the seal of professional approval. There now remains but little for the bibliographer to do, save to chronicle those changes which keep the book abreast of the current literature and researches in its special department.

We congratulate ourselves upon the position which this text-book occupies among the many excellent and recent additions to our physiological literature, since it confirms the prophetic announcement above made of its "flattering future." The full analysis which this work so lately received in these pages renders an extended notice, at this time, unnecessary; for, while the text everywhere bears evidence of revision, the subject-matter has not undergone any material alteration, save in one or two instances to be presently noticed.

The present edition, as compared with the first, contains numerous well-executed illustrations, which are invaluable for an easy comprehension of the text; several new sections are introduced into the different chapters; and in Book IV. an instructive chapter sets forth in a pleasant style the physiological relations of the "Phases of Life." Chapter II., Book I., in which the "Contractile Tissues" are discussed, bears the strongest evidence of the author's careful revision. The whole chapter, which is enlarged by thirty-one pages of new matter, has been entirely rewritten and rearranged. In the seventy-three pages allotted to the discussion, the student will find incorporated into the text the results of the very latest investigations; the whole forming an excellent and faithful *résumé* of the salient points in this important branch of physiology. The author is also exceedingly happy in his exposition of the "Vascular Mechanism," to which the fourth chapter is devoted. In our opinion, these two chapters are the most satisfactory in the book.

In the review above mentioned we called attention to some faults of omission, some of which omissions we are pleased to see have been supplied in the edition now under notice. We would, however, earnestly suggest that the student has a right to expect a fuller exposition of "The Tissues and Mechanism of Reproduction" than is here given; barely fifteen pages, without illustrations, are allotted to this very important division of the book. Our regret is heightened when we recall the deservedly high reputation which Dr. Foster enjoys in England and America, both as a student and author in Embryology.

Since the histology of a part is so often the key to the correct interpretation of its function, we would like to see introduced into future editions more extended references to the physiological anatomy of the various parts of the organism. The author presupposes on the part of the reader a sufficient knowledge of histology and physiological anatomy. All hail the medical millenium when the accomplishments of the average student just beginning the study of physiology will justify the author's assumption. Until *then*, we apprehend a text-book, such as this claims to be, should be made to conform to the existing order of things.

After a careful examination of this edition, we are strengthened in the conviction that Dr. Foster's book is well worthy of the confidence of the profession. The student or busy practitioner who consults its pages can rely upon finding a trustworthy presentation of the latest acquisitions in that department of medicine of which it treats. W. J. C.

ART. XLVIII.—*Memorial Oration in Honour of Ephraim McDowell "The Father of Ovariotomy."* By SAMUEL D. GROSS, M.D., LL.D., D.C.L. Oxon. Delivered at Danville, Ky., May 14, 1879. 8vo. pp. 77. Louisville: John P. Morton and Co., 1879.

THE Kentucky State Medical Society has issued, in a beautiful volume, the eloquent oration pronounced by Prof. Gross at the dedication of the monument erected to the memory of "the father of ovariotomy." The selection of the orator was as wise as it was appropriate, for to Dr. Gross is due the credit of having established the claim of McDowell to priority in the performance of the masterwork of the surgery of this century, and the oration is a clear, historical statement of its origin, and of the magnificent results which its practice shows.

Dr. McDowell was born in Rockbridge County, Va., in 1771, and died in 1830. He settled and began the practice of medicine at Danville in 1795, and his pioneer ovariotomy case was performed in that town in December, 1809, upon a Kentucky lady, aged 47, who survived the operation 32 years, during which time, it is said, she enjoyed for the most part excellent health. The meagre report of this case and two others was published without comment in the *Eclectic Repertory* for April, 1817, p. 242, and was noticed in the London *Medico-Chirurgical Review* (Jan. 1825, p. 216) with the sarcastic editorial exclamation "Credat Judæus, non ego". In the succeeding number (p. 408) the editor, Dr. James Johnson, said: "despite of all that has been written respecting this cruel operation, we entirely disbelieve that it has ever been performed with success—nor do we think it ever will." Eighteen months later he wrote (*Ibid.*, Oct. 1826, p. 620) "a back settlement of America—KENTUCKY, has beaten the mother country, nay, Europe itself, with all the boasted surgeons thereof, in the fearful and formidable operation of gastrotomy with extraction of diseased ovaria," and for his former unbelief he made the *amende honorable* to Dr. McDowell by adding "there were circumstances in the narratives of some of the first three cases that raised misgivings in our minds, for which uncharitableness we ask pardon of God, and of Dr. McDowell, of Danville."

We have dwelt upon the impression made at the time by the report of McDowell's cases as showing that he was so far in advance of his generation that the leading medical journal of the country of Keith and Spencer Wells received it with simple incredulity, because it deemed a successful ovariotomy an impossibility. In commenting on this notable episode in the history of ovariotomy, Dr. Gross says: "It is presumable that this frank and manly recantation on the part of a man who occupied so elevated and influential a position as the editorship of the most widely read medical journal in the world had some effect in controlling professional sentiment and inspiring confidence in the declarations of a surgeon whom he had only a few years before denounced as a backwoods operator unworthy of credence." Nevertheless Dr. McDowell had for a long time no imitators, and it was not until about 1843 that, through the bold and persevering example of the Atlees in this country, and of Clay in England, the operation began to be generally recognized as justifiable.

It would be interesting here to trace the history of the progress of ovariotomy, but the story has been often told, although nowhere more charmingly than in this address of Dr. Gross. The operation, from being in the beginning derided and denounced, nay even the strong arm of the law invoked to stop it, is now hailed as the great triumph of modern surgery, and is "performed in every country where civilization has carried the blessings of scientific medicine." Writing in 1872, the late Dr. Peaslee estimated that, in the United States and Great Britian alone, ovariotomy had within the preceding thirty years contributed more than 30,000 years of active life to women; all of which would have been lost had ovariotomy never been performed. Rarely has there been such a benefactor to his race as McDowell, and all honour is due his memory.

The Kentucky State Medical Society has published the dedicatory proceedings in a style worthy of the scholarly oration and of the occasion the remembrance of which it perpetuates. I. M. H.

ART. XLIX.—*A Treatise on the Theory and Practice of Medicine.* By JOHN SYER BRISTOWE, M.D. Lond., Physician to and Joint Lecturer on Medicine at St. Thomas's Hospital. Second American Edition revised by the Author. With Notes and Additions by James H. Hutchinson, M.D. 8vo. pp. 1081. Philadelphia: Henry C. Lea, 1879.

The Theory and Practice of Medicine. By FREDERICK T. ROBERTS, M.D., B.Sc., F.R.C.P., Prof. of Materia Medica and Therapeutics at University Coll., etc. Third American, from the Fourth London Edition. 8vo. pp. 1041. Philadelphia: Lindsay & Blakiston, 1879.

WE have before us new and revised editions of the excellent treatises on Practice of Roberts, and of Bristowe, and after careful examination we find that the good opinion we expressed of them on their first appearance is still applicable to them in their latest forms.

Dr. Bristowe has carefully revised his work and added to it a chapter on Insanity, and the American editor, besides notes distributed through the text, has inserted a new article on Hæmophilia. In our review of the first edition attention was called to the error of Dr. Bristowe's statement that cerebro-spinal meningitis is contagious, and in the present edition we find the paragraph remains uncorrected. Upon turning to ascertain Roberts's opinion upon this point we find that he holds that "there is no reliable evidence that cerebro-spinal fever is at all contagious," which is in accordance with the views of those writers who have studied the disease clinically. In his article on Autumnal Catarrh, we notice that the American editor, Dr. Hutchinson, in common with the late Prof. Morrill Wyman, has fallen into the error of supposing that our southern States are exempt from this curious affection; and as regards prophylaxis we think he does not appreciate the greater or less immunity which is afforded to some sufferers at least by residence at certain points on our north Atlantic coast.[1]

Dr. Roberts's work likewise has been carefully revised, the most marked improvements being found in the chapters relating to the Absorbent and the Nervous Systems. The American publishers have reprinted the work in two volumes bound in one, but have preserved the separate pagination, which is awkward and presents no compensating advantage.

Bristowe's work is wider in its scope and contains about one-fourth more matter in a nearly equal number of pages, owing to the difference in the type used; but where so much excellence prevails as in the text of both these books, it would be an ungrateful task to draw a comparative estimate of their merits. I. M. H.

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[1] See American Journal of the Medical Sciences, April, 1877, p. 420.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

Communication between the Aorta and Pulmonary Artery.

At a meeting of the Berlin Medical Society, in March, Dr. B. **Baginsky** exhibited a heart and large vessels, in which there was a direct communication between the aorta and pulmonary artery, the ductus arteriosus being obliterated. He had shown it to Professor Virchow, who was unable to remember having seen anything similar; nor was a similar malformation depicted by Rokitansky in his Atlas of defects of the cardiac septum. The specimen was taken from a boy aged 4, who had been under Dr. Baginsky's observation almost from birth. When eight days old, the child had symptoms of bronchial catarrh; it had an aphonic hoarse cough, but there was not much dyspnœa. In a few days, Dr. Baginsky examined the heart, and found at various points a large number of systolic and diastolic murmurs, with resistant dulness over the right ventricle, and rather irregular action of the heart. The pulse was irregular. Dr. Baginsky came to the conclusion that there was a malformation of the heart, but of what kind he could not determine. In the course of the succeeding four years, the child had numerous attacks of bronchial catarrh; .it grew normally, however, and was strong, but pigeon-breasted. Last year it had nephritis, probably of scarlatinal origin, followed by hæmaturia and afterwards by suppression of urine. In December, symptoms resembling hooping-cough appeared. Convulsions of the whole body took place repeatedly, and the child died. Dr. Baginsky examined the body. The heart weighed 250 *grammes* (about 8¾ ounces), and was 12½ *centimeters* (nearly 5 inches) in width. There was considerable hypertrophy of the right ventricle, the wall being 1.4 *millimetres* thick. The left ventricle was less hypertrophied, but was much dilated. The semilunar valves on both sides were normal. The musculi papillares of the auriculo-ventricular valves were atrophied. The ductus arteriosus was normally obliterated. Between the aorta and the pulmonary artery, there was a communication, about a *centimeter* in extent, with a thickened and indurated edge. The opening was nearly triangular, and its base was on a level with the upper free edge of the posterior semilunar valve of the pulmonary artery, and about half a *centimeter* above the free edge of the aortic valves. Professor Virchow was of opinion that the hypertrophy of the right ventricle was probably congenital, and that the dilatation of the left ventricle had taken place after birth. There was parenchymatous nephritis on both sides. The remaining organs were normal.—*British Med. Journal*, Nov. 1, 1879.

On the Development of the Coloured Blood-Corpuscles.

In regard to the development of the red blood-corpuscles, the study of comparative anatomy brings HAYEM to the following conclusions (*Archives de Physiologie*, 1879, p. 201). The blood of vertebrates contains constantly a large number of particular elements which undergo great modifications, so that when they escape from the bloodvessels they run together to form a fibrous network. These elements possess, then, qualities totally different from those of the white cells (which remain always independent of that meshwork), qualities which correspond to special histological and histo-chemical characters. Between the largest and smallest of these elements there are always to be found intermediate specimens, which show that we have to do merely with one and the same element in the course of evolution. In the course of development these elements lose their primary characteristics and assume those of the red blood-disk. In spite of the two different types under which the red corpuscles present themselves (nucleated and non-nucleated), the evolution which these elements undergo is the same in all vertebrate animals. In all cases they commence by being hæmatoblasts, nucleated or non-nucleated, of which the general physiological properties are the same in all classes. Under certain conditions the intermediate forms become very abundant, as, for example, when the animals have been subjected to considerable hemorrhage, to which succeeds a phase of regeneration of blood.—*Lond. Med. Record*, Nov. 15, 1879.

MATERIA MEDICA AND THERAPEUTICS.

On Benzoate of Soda.

At the meeting of the Znaim Association of Physicians in Mähr-Budwitz, Dr. ULLMANN read a paper on new remedies, in which he states (*Allegemeine Med. Chirurg. Zeitung*, 1879): "Benzoate of soda was recommended by Prof. Klebs for all infectious diseases created by vegetable parasites. Letzerich especially praised benzoate of soda as a remedy for diphtheria, but experiments with it in Vienna have not proved successful, etc." If we now investigate the series of experiments by Dr. Gnändinger, we find that the patients were taken to the Children's Hospital of Dr. Wiederhofer, of Vienna, from two to five days after they were affected. We further observe, that in the children who died, transmitted exudations, acute morbus Brightii, hemorrhages of the peritoneum, pronounced increase of the lungs, bronchiectasis, bronchitis, atelectasis, florid rachitis, etc., were found; that, therefore, in some of them serious secondary phenomena, and in others, either constitutional diseases or other affections existed, by which the capability of resisting the diphtheritic process had been considerably reduced. The majority of those who died were badly nourished and weak. It is obvious that, under such conditions, even the best and most careful treatment, as well as the best and safest method, cannot command great success. Benzoate of soda, although very effective, has therefore, been tried under very unfavourable conditions. He maintains, however, that benzoate of soda has, of all remedies hitherto known, the most favourable therapeutic influence on the diphtheritic process, although it will probably never answer such expectations as those of Gnündinger. Many other practitioners have also employed this remedy for other infectious diseases with favourable results. Dr. Ullman concludes this article with a brief description of the following remarkable case. Amongst other children, a boy, eight years old, was taken ill with diphtheria of the tonsils and violent general symptoms two months ago. On the second day of the treatment, the morbid process, nevertheless, passed into the larynx, the patient got the barking cough, and severe symptoms of stenosis of the larynx appeared. Besides 15 grammes of benzoate of soda to be taken internally every day, Ullmann also ordered this remedy to be inhaled in a solution of 10 per cent. by means of a steam-inhaling apparatus every two hours, after which treatment, abundant blood-coloured, dough-like, diphtheritic coats were ejected by coughing. After five days, the boy, who had been given up, was cured, but he did not regain his proper voice for a fortnight.—*Lond. Med. Record*, Nov. 15, 1879.

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The Physiological Action and Therapeutic Value of Sclerotic Acid.

Sclerotic acid is probably the active principle of ergot of rye. It was discovered in 1877 by Dragendorff of Dorpat, and is an amorphous, cinnamon-brown substance, of the empirical formula $C_{12}H_{19}NO_9$, hygroscopic, and readily soluble in water. Good ergot contains about 4 or 5 per cent. of it in combination with bases. It is a very feeble acid, and in the presence of calcic carbonate only causes an evolution of carbonic acid when warmed. With sodium, however, it forms a stable sclerotinate. With phospho-molybdate of ammonia its aqueous solution gives a dark green, with tannin, a reddish precipitate. So much for its chemistry. Its physiological properties have lately undergone very careful investigation by Nikitin in Professor Rossbach's laboratory at Wurzburg (*Wurzburger Phys. Med. Verhand.*, xiii.; *Centralblatt Med. Wiss.*, No. 42, 1879). He finds that it is so rapidly excreted by the kidneys in warm-blooded animals that not a trace can be detected in from forty to forty-eight hours after its administration. Very large doses cause death by general paralysis; and in warm-blooded animals their immediate effect is a depression of temperature of from 1° to 3° Cent. which continues until death. Professor Binz (*Grundzüge der Arzneimittellehre. Sechste Auflage*, S. 53) states that 0.01 gramme sclerotic acid gradually brought on general paralysis in a middle-sized specimen of *Rada esculenta*, but that the next day the creature was again well and lively. Nikitin sums up the action of sclerotic acid and its sodium salt as follows:—They both possess the physiological and therapeutic properties of ergot itself, but the sclerotinate is a weaker drug than the acid. Both chiefly act on the central nervous system. Frogs are very sensitive to the acid; among mammals, carnivora are more affected by it than herbivora. In frogs the reflex irritability of the spinal cord is completety abolished; in warm-blooded animals it is never quite lost even just before death. The acid only paralyzes the sensory nerves if brought into direct contact with their peripheral ends; the motor nerves as well as the striped muscles are unaffected by it. In mammals the heart is not influenced even by relatively large doses. The blood-pressure is only permanently reduced by large doses. At death the respiration ceases before the heart. In mammals the acid accelerates the intestinal peristalsis; and it excites contraction both of the pregnant and non-pregnant uterus, pre-existing contraction being intensified so that the organ assumes a paler tint. Nikitin has not observed any poisonous effects on the fœtus *in utero* either from the acid or the sodium sclerotinate. From his experiments on animals, he calculates that an adult man weighing fifty kilogrammes would be killed by about ten grammes sclerotic acid. In any case it is a much less powerful poison than most of our officinal alkaloids. The ordinary dose which has been hitherto given by subcutaneous injection is, however, only 0.02 to 0.03 gramme two or three times daily. Sclerotic acid seems likely before long to partially replace ergot as a drug. It has the advantage of remaining indefinitely without loss of strength, if only kept in a dry place and undissolved. Its sodium salt Nikitin considers the best preparation for internal use in the human subject. Subcutaneous injection of either drug causes a "sharp biting" pain, which passes off in a few minutes. Von Ziemssen claims for sclerotic acid over ergotin that the former causes no inflammation at the seat of puncture.—*Med. Times and Gazette*, Dec. 6, 1879.

On Rectal Alimentation.

Alluding to an article by M. Michel, which has lately appeared in the *Gazette Hebdomadaire*, giving an account of the trials of rectal alimentation that have been made, and in which he came to a conclusion unfavourable to the absorption of the nutritive matter of the substances injected, Prof. BROWN-SÉQUARD observes, in the number of the same journal for November 14, that, however applicable this conclusion may be to enemata of milk, broth, eggs, or defibrinated blood, it certainly is not so with regard to enemata of meat and pancreas. The practical question is not whether the large intestine does or does not secrete juices endowed with digestive power. In a therapeutical point of view the question at the present time is to know whether, on mixing with the alimentary matters either gastric juice or pancreatic juice, and injecting the mixture into the intestinal canal, digestion of these matters will take place, with absorption of the product of digestion. The experiments and clinical observations of Leube and of Fiechter, and those of Prof. Brown-Séquard himself, place the fact quite beyond contradiction; and experiments showing that the large intestine is not possessed of digestive functions do not contradict this assertion. It is a question of artificial digestion, in which the large intestine may be as inert as any vessel in which this might be conducted.

Prof. Brown-Séquard refers to several cases—some published, and others not —in which he has by means of enemata of meat and pancreas been able to keep patients for days and weeks (in one for more than three months) without loss of weight and strength. The quantity of meat required, when a patient has to be maintained solely in this manner, is at least 400 to 500 grammes per diem, and of pancreas from 150 to 200 grammes—these quantities serving for two daily enemata. When the pancreas is quite fresh, the digestion of these substances is so complete that no traces of their presence can be found in the well-formed feces which the patient passes—the tissues of both the gland and the flesh having been evidently digested in a complete manner.

In the number of the *Gazette* for November 21, Prof. MAYET, of Lyons, states—"I have employed this means in the Lyons hospitals for six years, but with certain precautions, which I believe to be of considerable importance. Why should we inject the tissue of the pancreas, which contains unabsorbable substances, and meat in a state of nature? Even chopped up and triturated, such a mixture might cause irritation of the intestine, and not be easily retained. To obviate this inconvenience, I have the pancreas bruised in a mortar with tepid water at about the temperature of 37° C., and then press the pulp obtained in a cloth. The liquid so procured is intimately mixed and triturated with the flesh without fat, which has been chopped and separated from all fibrous parts, and with the yolk of an egg. The product is left to stand during two hours, keeping it at the same temperature, and is then thrown into the rectum, first cleared out by a simple oily enema. By this procedure we have the advantage of injecting, not substances in a state of pulp which have not been digested, and which may be rejected, but alimentary substances that have undergone, at the temperature of the economy, the action of the dissolving ferments, unmixed with the *débris* of useless tissues, and therefore lending itself much better to rapid and easy absorption."—*Med. Times and Gazette*, Nov. 29, 1879.

MEDICINE.

Exact Period of Commencing the General Treatment of Syphilis.

Opinions on this important question are still divided. While one party regards primary treatment, *i. e.*, when the first local morbid phenomena are observed, as necessary, the other party decides for later treatment, and this only when certain definite symptoms of the general illness positively show themselves. Both parties appeal to statistics in favour of their theories. Professor SIGMUND means, by the term "primary," that period of the syphilis which extends from the transmission of the disease till the first symptoms of the same show themselves on the outer skin, and the mucous membrane of the throat, *i.e.*, from six to eight weeks. During this period, the course of the disease runs according to an invariable type, while in the later period only the secondary forms appear typically, and these only in the beginning; because they vary afterwards as to symptoms and duration. The primary forms continue in the great majority of cases after the evolution of the secondary forms, and both will then indicate the antisyphilitic treatment. The remedies for this affection are the well-known preparations of iodine and mercury, their combinations and the concoctions containing them. In order to answer the question in dispute, it is obviously necessary to study thoroughly many and various forms of this disease in both sexes and at various ages, taking into account the constitution, external influence, and the various modes of treatment. Especially as to the success of the treatment during the chronic course of syphilis, and its transmission by procreation, only close observation, extending over many years, can decide. The author believes himself peculiarly qualified to make the following statements, on account of his exceptionally large experience. 1. The primary forms of syphilis take a favourable course during the period of six to eight weeks by purely local treatment, corresponding to the anatomical seat, type, and extension of the affected tissues, the constitution of the patient, and the external circumstances which influence him. The healing process is neither simplified nor shortened by any medicinal antisyphilitic general treatment. The use of energetically effective means (iodine, mercurial preparations, aperient and sudorific preparations), as well as lowering treatment, frequently retard the healing process, or create a deterioration of the disease. This has been clearly proved in those cases in which the employment of the aforesaid means induced an unfavourable course of the disease, but in which rapid improvement took place after resorting to purely local treatment. 2. The secondary forms of syphilis are so mild in a great number of patients (40 per cent.) that they do not perceive them, and in a further considerable number of patients (10 per cent.) morbid appearances on the skin and the mucous membrane of the throat are scarcely perceptible, and rapidly take a favourable course by merely adequate local treatment, without disturbing the nutrition, functions, and general condition of the respective patients. Experience proves that serious secondary forms appear less when the expectant treatment is adopted than when antisyphilitic means are resorted to from the commencement of the disease. The author also maintains that, in the later period, there are more numerous and certain indications for the selection and application of the remedies. 3. The more extensive, pronounced, and obstinate forms of syphilis, whether initial or secondary ones, develop themselves in persons who suffer simultaneously either from a pronounced or a latent constitutional disease, also in those who live under unfavourable hygienic and dietetic conditions. Many antisyphilitic modes of treatment have the same unfavourable influence. 4. Experience has proved that an adequate, general, antisyphilitic treatment, resorted to only in the later period, is followed by more rapid and complete results than the primary treatment, as the latter is protracted and frequently requires repetition. According to the author, the best period for the commencement of a general antisyphilitic treatment is, therefore, the secondary, but even then we must only resort to it if several organs and systems suffer from this disease, or if one of the same is seriously affected, or the nutrition and functions of the organism are known to be deteriorated solely by the syphilis. In mild attacks, and the affection of individual organs, adequate local treatment is also sufficient for the second period. For every period, however, and for every form of syphilis, the most attentive hygienic and dietetic care as well as regard for, and treatment of, other constitutional diseases are indispensable. The author rejects as untenable the view popular in daily practice, that out of regard for anxious patients, and the reputation of the physician, it is humane and wise to commence the general treatment with small doses of the antisyphilitic remedies during the primary period. The employment of a mode of treatment regulated according to the principles before mentioned will, in time, alone make the demands and judgment of the patient reasonable.—*London Med. Record*, Nov. 15, 1879.

Asphyxia caused by the Ascaris Lumbricoides.

Dr. C. FÜRST, one of Professor Billroth's assistants at Vienna, reports (*Wiener Med. Wochenschrift*, 1879, Nos. 3 to 6) the case of a little girl of four, who was suddenly seized while in the hospital with symptoms of asphyxia, the cause of which could not be discovered during life. In spite of tracheotomy and artificial respiration, she quickly died. Two hours later a living female ascaris was found hanging out of her nostrils. Dr. Fürst had noticed, after performing tracheotomy, that a male catheter, which he used in his haste instead of a canula, met with resistance when first introduced; and that after he had withdrawn it and made a second attempt, it passed easily to the bifurcation of the trachea. Probably therefore, the ascaris had retired towards the upper part of the larynx between the two attempts to make the catheter enter the trachea, and still later it had wandered into the posterior nares. The autopsy revealed no other possible cause of death. A male ascaris was found in the jejunum. Dr. Fürst has collected eight other cases of the same kind, besides sixteen previously collected by Davaine, and has appended an analysis of their clinical history to his paper, of which the following is a *résumé*:—The predisposing causes of entrance of the ascarides into the larynx are chiefly vomiting, fever (their activity, according to Kuchenmeister, being much intensified by a high temperature), purgatives, and long fasting. Children are much more liable to this accident than adults. The symptoms are most often those of acute dyspnœa and aphonia, ending in asphyxia and early death. Sometimes the worm passes the larynx completely, and remains in the trachea or bronchi. Here death does not ensue for several days, but the patient remains aphonic, and indicates the front of the neck as the affected part. Ultimately, bronchitis ends the scene. The diagnosis is difficult. We must exclude laryngitis, croup, diphtheria, spasm and œdema of the glottis, and diseases of the lungs. We must make sure that a cold abscess has not burst into the larynx, and that asphyxia is only due to a foreign body lodged in the larynx or pharynx. The only clue to the presence of an ascaris—all other foreign bodies being excluded—is the knowledge that the patient has previously suffered from these worms. If the asphyxia passes off, and the patient complains of pain in the trachea, the probabilities in favour of ascaris lumbricoides are increased. As to treatment, if the worm cannot be felt or seen from the mouth, emetics and expectorants may be tried. Tracheotomy has failed to save the children's lives in the three cases in which it has as yet been tried. Post-mortem examination generally reveals the offending worm in the place to which the symptoms pointed. It excites inflammation as a simple foreign body, as well as by its movements and by a peculiar corrosive action which it exerts. If it lodges in a bronchus it may cause pneumonia in the neighbouring lung tissue. In the larynx the arytænoid cartilages suffer most, being in the direct line of passage of the worm from the œsophagus. The appurtenances proper to death by suffocation, and the presence of other ascarides in the intestines will further be detected.—*Med. Times and Gazette*, Dec. 6, 1879.

On the Etiology of Tabes Dorsalis.

Of 185 cases of typical tabes that were observed by BERGER (*Bresl. Aerztl. Zeitschr.*, Nos. 7 and 8, 1879), 145 were males and 40 females. The majority of the patients were between 30 and 50 years old (83 per cent. of the whole number). Concerning the part that sexual excesses take in the etiology of the disease, he does not think that they go beyond perhaps increasing the predisposition for it, but this has not yet been satisfactorily proved. The principal cause of tabes is chill; whether bodily fatigue has the same effect, has not yet been proved. The author agrees with the French writers, who assume that tabes is frequently caused by syphilis. He himself has met with several cases where the affection broke out a short time (six months to two years) after the infection, without any other cause. In a comparatively large number he obtained good results, though not of a permanent character, temporarily by antisyphilitic treatment.—*Lond. Med. Record*, Nov. 15, 1879.

On the Etiology of Sensitive Neurosis in the Region of the Median Nerve.

The following case is published by Herr FRAGSTEIN (*Berl. Klin. Woch.* No. 13, 1879). A gentleman who had always enjoyed good health began to complain of a sensation of numbness and formication in the thumb, and in the fore and middle fingers of the right hand. A similar slight sensation existed in the radial side, both of the fourth finger and the volar surface of the hand, and extended along the wrist to the muscles of the thenar. There were no motor or trophic disturbances, either in the muscles or in the skin, hair, and nails. The spot where the median nerve divides into the different digital branches was sensitive to pressure. A very disagreeable sensation always followed when the patient came into contact with cold objects. No painful spots could be found in the whole course of the nerve in the arm. The patient, being a dentist by profession, had been obliged to press frequently with the palms of his hands against the conical handles of his instruments. He rapidly improved by treatment with the constant current.—*Lond. Med. Record*, Nov. 15, 1879.

On Hemiglossitis.

Dr. NOEL GUENEAU DE MUSSY has recently published (*Archives de Méd. et Rev. Méd.*, Oct. 3, 1879) two interesting cases of hemiglossitis. The first case relates to a man, 80 years of age, suffering from eczema, and convalescent from a slight pharyngo-laryngitis, who, after several days of cephalalgia of the left side of the head, was attacked with fever, accompanied by pain and swelling of the tongue. The swelling increased rapidly, being principally confined to the left half, and there was a large congested gland under the left maxillary angle. The tongue quadrupled in size, and respiration was consequently much impeded. Under the influence of a sedative, and of a mouth-wash of chlorate of soda, this gland resolved rapidly. On the tenth day it was in a very advanced state, confined to the left side of the tongue, with lancinating pains leading to a small oval projection, excessively sensitive to the touch, and coinciding with similar pains on the corresponding side of the head. Borax was then substituted for chlorate of soda. The second case, relating to a subject 25 years of age, is similar to the preceding one. The commencement of the disease succeeded, as in the first patient, to a pharyngo-laryngitis. The swelling was almost exclusively confined to the left side, where a dull pain was felt, without shooting pains, and coinciding with a similar pain under the left ear, and on the left side of the head, which had supervened in the course of the glossitis. *Herpes labialis* came on, and when the tongue had somewhat diminished in size, an oval-shaped erosion, a small pink spot, could be seen on it, with a group of purplish granulations towards the frænum. There was also in the case of this patient a glandular swelling under the angle of the lower maxilla. Dr. Gueneau de Mussy reminds us that Graves "has made this singular remark, confirmed by M. Dechambre, that in all known cases of hemiglossitis the affection is situated on the left side." M. Dechambre, however, in his article "Langue," in the *Dictionnaire Encyclopédique*, has not written "in all known cases," but only "nearly always." The writer refers the pathogenesis of this affection to "an irritable state of the nerves of the tongue (lingual nerve and chorda tympani), having brought on the trophic lesion of the organ." In fact, certain symptomatic peculiarities tend to give weight to this explanation. It may, however, be noted that the pains were only lancinating, and only preceded the hemiglossitis in one of the patients; that, on the contrary, the attack was in both cases preceded by pharyngoglossitis, and the inflammation of the pharynx has been considered by many writers as frequently being the starting point of the glossitis. However that may be, the two fresh facts noted by Dr. Gueneau de Mussy form a valuable contribution to the history of parenchymatous hemiglossitis.—*London Med. Record*, Nov. 15, 1879.

On the Effects of Benzoate of Soda in Diphtheria.

The results which have been observed by the author are much less favourable than might have been expected from Letzerich's eulogium on the wonderful effects of this drug. Of 17 children with diphtheria who were treated with benzoate of soda in St. Anne's Hospital in Vienna, 8 died; while of 76 who were treated with ice, chlorate of lime and stimulants, 49 recovered, 25 died, and 2 were still under treatment when the paper was written. GNÜNDINGER points out very justly that perhaps we are not justified in drawing conclusions respecting the efficacy of a remedy merely on the strength of the death-rate, but he studies carefully all the other points in which Letzerich had asserted the superiority of the remedy, and draws the following conclusions: 1. Benzoate of soda does not invariably prevent the formation of the false membranes. In this respect it does not seem to be superior to any other remedy. 2. It does not seem to have any special influence on the general state of health of the patient. The high temperature has often been observed to fall, both spontaneously and under the influence of quinine, while benzoate of soda has had no effect at all on it. 3. It seems to have some effect on the removal of the diphtheritic membrane, which may be deduced from the fact that, in six out of the nine cases which recovered, the membranes were cast off on the third day; in one case on the fifth day; and, in three cases, they were visible from thirteen to twenty days. 4. The author does not think that any direct harm has been done by the use of benzoate of soda, although in some cases the patient had taken a considerable quantity of it. In late years, all the remedies that have been recommended for diphtheria have been tried at St. Anne's Hospital. It has resulted from these experiments that ice, chlorate of lime, and stimulants, have hitherto proved the most reliable means for the treatment of this terrible disease.—*London Med. Record*, Nov. 15, 1879.

The Local Treatment of Putrid Expectoration.

Putrid expectoration is an accompaniment of various chronic affections of the lungs, and especially of bronchial dilatation. In the worst cases of this latter affection the patient is not only a nuisance to himself and his surroundings by the foul odour of his sputa, but the stagnation of the bronchial secretion on which its putridity depends is dangerous to himself in two ways—by the irritation and inflammation it is liable to cause at the seat of its occurrence, and by the infection of healthy portions of lung by inspiration of some of the putrid matter. The uselessness of internal remedies in these cases is well known, and many of them have been and no doubt still are *opprobria medicinæ.* Treatment by inhalation, especially of the terebinthinates, has been tried, with a certain amount of success more largely on the Continent than in this country, but the method adopted has been faulty. A few drops of the drug have been poured on the surface of hot water and inhaled for a few minutes two or three times a day, and a variety of cumbrous instruments have been suggested for this purpose. Two or three years ago, Dr. W. Roberts, of Manchester, described a simple portable "respirator inhaler," in the form of a metal box perforated in front and behind, and filled loosely with layers of tow on which the inhalation liquid was poured. This inhaler fits over the mouth, and is fixed by elastic bands over the ears like an ordinary respirator. The introduction of this instrument, although the medical profession as a body may have failed to recognize it, was undoubtedly a step in advance. It showed the practicability of a *continuous* method of inhalation. This method has for some time been extensively tried with an inhaler similar in principle to Dr. Roberts's, by Dr. H. Curschmann, late of Berlin, and now director of the Hamburg General Hospital, who has done much not only to popularize it, and to do away with objections to its use, but to prove its value in the most positive manner.

His respirator is figured in the *Berliner Klinische Wochenschrift*, No. 29, page 430, and it is to be obtained from Duntzelt, 22 Schaaren-strasse, Berlin. It is made of vulcanite, and has a rim of soft India-rubber, where it touches the face, to insure close contact and prevent air entering the lungs except through the respirator itself. Dr. Curschmann generally covers both nose and mouth, so that all air which the patient breathes is saturated with the vapour in the inhaler.

The substances used for inhalation, and which are poured on a sponge in the front of the cavity of the respirator, are all well-known drugs—pure oil of turpentine, carbolic acid, and thymol, either pure or diluted with from one to three parts alcohol, and creasote. Dr. Curschmann's application of them differs, however, from what most practitioners are accustomed to, in his using them either pure or, if diluted, but very slightly diluted; and yet most careful examinations of the urine after the prolonged inhalation of oil of turpentine never revealed the least renal irritation; nor did the patients complain of any unpleasant symptoms, except occasionally a little oppression of the head and headache. The same is true of the use of undiluted carbolic acid previously liquefied by a gentle heat. If care be taken to wipe the edge of the inhaler frequently where it touches the face, and to anoint the face itself with simple ointment, there is no local soreness; and Dr. Curschmann has never seen any irritating effect produced either on the inside of the mouth or on the larynx by the administration of the vapour of carbolic acid in so concentrated a form; nor has any instance of so-called carbolic "intoxication" occurred in his practice. This statement refers to adults, as he has had scarcely any experience with children. He explains the harmlessness of the pure acid when inspired, first by the small amount of it which evaporates and reaches the lungs at all; and, secondly, by the fact that the large part is, very soon after reaching the dilated bronchi or cavities, expectorated with their secretion, and that the false membrane lining these cavities probably offers considerable resistance to its absorption into the system. Both carbolic acid and thymol evaporate much more freely in alcoholic solution than when pure; and Dr. Curschmann has almost invariably used thymol in this form alone. Alcoholic solutions of carbolic acid are more apt to cause paroxysms of cough than the undiluted acid. More patients, however, object to the use of thymol than of carbolic acid; but the former is, no doubt, safer for children's use than the latter.

Creasote never requires dilution, and on this point we are able to confirm Dr. Curschmann's experience, but it is very important to see that the druggist supplies a pure article. Curschmann prefers creasote in cases where there is a tendency to hæmoptysis; he finds that it not only has a styptic action and disinfecting properties as powerful as those of carbolic acid, but that its vapour is sedative and allays rather than excites cough. Incidentally he mentions that he has seen benefit result from creasote inhalations in the hæmoptysis of phthisis.

In illustration of the really wonderful effects of the continuous inhalation method in putrid bronchitis, Dr. Curschmann describes in detail two very severe cases of what in ordinary parlance would be roughly called "phthisis." In the first case the right lower lobe was affected, there was dulness to the angle of the scapula behind, with loud bronchial breathing, and abundant moist râles. The expectoration was very abundant, and so fetid that it was difficult to stay near the patient. Evening temperature 38.6° C.; pulse 100. The patient, a man of thirty-nine, had fallen away very much during his eighteen months' illness, and weighed only fifty-seven kilogrammes, though of large build. He was treated with inhalations of pure carbolic acid, at first for two or three hours at a time, and afterwards almost continuously. Within a few days the sputa had almost lost their fetor; within a month they were absolutely odourless. Simultaneously the temperature became normal, and the physical signs of dulness, etc., as well as the patient's general condition, steadily improved. Before leaving the hospital, and under inhalation treatment alone, he had gained nine and a half kilos, or about twenty pounds in weight. The second case is quite as remarkable. A man of fifty-three, who had been ill some months with symptoms of phthisis, was admitted under Dr. Curschmann's care in November, 1878, with dulness, bronchial breathing, and medium-sized moist râles over the lower half of the right lung posteriorly. At one point percussion was tympanitic, and auscultation revealed signs of a cavity, which was proved to be such by tapping and drawing off some of its fetid contents. The patient expectorated about a litre of most intolerably putrid secretion in twenty-four hours. His evening temperature was 39° C., his pulse 112, and he suffered from night-sweats. He was treated throughout with almost continuous inhalations, first of oil of turpentine, and then of pure carbolic acid. In three weeks the sputa were quite free from smell, fever and night-sweats had left him, and he only spat up about one-third of the amount on admission. As in the first case, there was an ultimate extraordinary disappearance of the abnormal physical signs, and the patient gained twenty pounds in weight during his scarcely six months' stay in the hospital. Except a little morphia for the cough just at the first, he took no medicine internally—no hypophosphites, no iron, no cod-liver oil. In both cases the successful result can be attributed to nothing except to the antiseptic treatment—for such it is—by inhalation. We commend the study of the complete history of these cases in the original to our readers, and urge on them a trial of the continuous method of inhalation in suitable cases. We have been surprised to find even physicians with a large *clientèle* of lung patients unaware even of the existence of so simple and valuable an instrument as Dr. W. Roberts's respirator inhaler.—*Med. Times and Gazette*, Nov. 15, 1879.

Purulent Diaphragmatic Pleurisy.

According to the remark of Laennec, if diaphragmatic pleurisy is one of the most common maladies, as the frequence of adhesions and false membranes observed in this region after death attests, it is one of those which are most frequently unrecognized. In a work published in 1853, Dr. NOEL GUENEAU DE MUSSY has indicated signs which he believes render the diagnosis easier and more precise. They are repeated, and completed by some new observations, published in the *Archives Générales de Médecine*, July, 1879.

Besides the spontaneous pain and that which is evoked by manual pressure at the level of the base of the chest, there are disturbances of sensibility which appear to him to have a great value for diagnosis. The phrenic nerve undergoes a morbid irritation which throws light upon the seat of inflammation; it becomes the seat of hyperæsthesia, which may be determined at the level of the superficial expansion of the nerve in the epigastric region, and especially at a point which he has called the "diaphragmatic button," because when it is pressed the patient complains instantly of a keen sensitiveness, sometimes of an excessive, unbearable pain, accompanied by twinges which make him start and groan. This point is found at the intersection of two lines, of which one is parallel to the external border of the sternum, and the other, perpendicular to this, follows and prolongs the border of the ribs.

The author knows only one disease of inflammatory character in which, in a much lower degree it is true, this hyperæsthesia of the phrenic nerve is observed. That is pericarditis, and not only is it there less pronouuced, but often the seat of it is a little different, and the maximum of the abnormal sensibility, in many patients affected with pericarditis, corresponds to the costo-xiphoid angle.

At the same time that the terminal extremity of the phrenic nerve manifests this trouble of sensation, an exaggerated sensibility is determined between the two lower attachments of the sterno-cleido-mastoid muscle; the irritation is propagated in an ascending course along the trunk of the nerve; it is turned by a sort of reflex action upon the nerves which have a connection in origin with the phrenic, and provokes pains in the shoulder and in the subclavicular region.

A neuralgia and hyperæsthesia of the last intercostal nerves not unfrequently accompany the hyperæsthesia of the phrenic nerve. Another habitual symptom, though not absolutely constant in effusions upon the diaphragm, is the depression of the last rib corresponding to the diseased side. Pressed down by the collection of liquid, the diaphragm draws in this rib; and when the patient is seated it may be seen that it is more oblique, and that it descends lower at its free extremity than that of the opposite side. Much more rarely the tenth rib appears pressed down a little in some patients, and, as a consequence of the sinking of the diaphragm, the liver usually projects beyond the ribs.

The immobility of the hypochondrium is not constant, and it has not the necessary relation with the purulent character of the effusion affirmed by some physicians. To this immobility is added, sometimes, a sort of retraction of the linea alba and of the umbilicus, which at each inspiration seems to draw them from the side opposite to the immobilized hypochondrium; further, when the region of the flank corresponding to the diseased pleura is held in the hand, immediately below the ribs, if the diaphragm be pressed down by an effusion, a resistance and fulness are felt which are not found in the other flank.

Dr. Gueneau de Mussy has found in two cases that the hollow [saddle-shape] of the flank tends to be effaced, and that this region, instead of offering a concavity, forms almost an upright plane between the iliac crest and the costal border, the distance of which is diminished.

Percussion gives a sound with a sharp tone, a little tympanitic, in a semicircular band which corresponds to the part of the lower lobe of the lung contiguous to the effusion. On auscultation, the vesicular sound at the level of the collection of liquid is, in general, less strong, less full, and sharper than in the rest of the lung; it is sometimes mixed with crepitant or mucous râles, which indicate a congestive state of the pulmonary tissue about the seat of effusion. The weakness of the respiratory sound, followed by prolonged expiration, although more pronounced at the base, may exist in the whole lung of the diseased side, and depend then upon the compression of the principal branches by an enlargement of the tracheo-bronchial glands which ordinarily accompanies diaphragmatic pleurisy.

All these signs lessen the obscurity which enshrouded this affection in the time of Laënnec, and Dr. Gueneau de Mussy states that he has had, many times in the course of thirty years, occasion to verify their exactness. He has frequently seen a pleurisy, which in its first stage he had recognized to be limited to the diaphragmatic region, generalize and become thoracic at the same time that the functional troubles diminished; in other cases, necropsy has given an indisputable confirmation to the diagnosis formed.—*London Med. Record*, Nov. 15, 1879.

Case of Interrupted Respiration, due to the Movements of the Heart.

Two explanations have been commonly put forward to account for the occurrence of interrupted respiration: 1. That the bronchi in certain parts of the lung are narrowed, either by swelling of their mucous membrane or through compression by tuberculous deposit, and the access of air to these portions is therefore rendered more difficult, and their dilatation follows a little later than that of the healthy pulmonary tissue; 2. That it is a form of pleural friction, observed at the onset of pulmonary tuberculization, where the partial pleurisy of the apex interferes with the respiratory movements, or where the pleural friction adds a sound to that of respiration, which is confounded with it. Latterly, M. Potain has maintained that this form of respiration is an attenuated extracardiac bruit. LEREBOULLET, although recognizing the justness of the two preceding explanations, gives an instance (*L'Union Médicale*, Oct. 2, 1879) which appears to support M. Potain's view. The case was one of pulmonary tuberculization, in which there was heard an expiratory sibilant blowing sound all over the chest, following the cardiac rhythm. The patient presented the signs of tuberculous infiltration of the left apex, dulness, bronchial breathing, and some humid râles. Subsequently, additional signs of a congestive attack occurred on both sides, when it was noticed that the two last thirds of the expiratory murmur were replaced by a respiratory bruit of a sibilant character, harsh and less musical than bronchial sibilus. It appeared brusquely during expiration, and partook of the cardiac rhythm, so that at each expiration one heard two or four, most frequently three, sibilant sounds, separated by a scarcely appreciable interval. It could be heard all over the front of the left chest, also in the lateral region, and over the heart. This peculiar sound disappeared if the patient sat up in bed; but on making the patient lie on his belly the same phenomena reappeared over the right base, and also all over the left lung behind. On listening over the larynx it was also found that the expiration was terminated by three or four râles, synchronous with the cardiac movements. There was no cardiac disease. He accounts for this sound by the fact that, during expiration, the thoracic walls being more contracted than during inspiration, the compression of the heart on the lung is greatest, and that thus the heart compresses a sufficient number of pulmonary cells to give rise to a current of air capable of generating in the large bronchi, and even in the trachea, an interrupted expiratory sound, which can be heard even on auscultating the larynx.—*London Med. Record*, Nov. 15, 1879.

Heart Diseases Associated with Scarlatina and Measles.

Dr. Arthur Ernest Sansom, Assistant Physician to the London Hospital, presents (*Med. Times and Gazette*, Oct. 25, 1879) the following statement of the relation existing between heart disease and scarlatina and measles:—

It appears to me evident that scarlatina, occurring in a healthy child, may be a cause disposing to cardiac disease—pericarditis, or endocarditis; and this sometimes with, and sometimes without, the manifestation of distinct rheumatic phenomena. From the evidence before us, I think we may conclude that the probabilities are against the view that the heart disease is due to the *direct* operation of the zymotic poison. We find that it is not developed with any signs of pyrexia; that it is not associated with the zymotic disease in the acute period of manifestation of the latter; that it may occur after the lapse of periods during which symptoms of indefinite ill-health may be manifested in varying degrees of remoteness from the original attack. The forms of disease seem to bear a striking resemblance to those occurring in association with rheumatism, and we have not to seek far in order to find the link which associates the morbid conditions in the one case with those in the other. In rheumatism there is strong reason to believe that the phenomena are due to the retention in the blood of lactic or uric acid and allied excrementitious products. In scarlatina the blood is loaded with material that should, in normal conditions, be excreted; moreover, elimination is peculiarly difficult, so that with increased production there is impeded excretion, and uric acid and other effete products are retained in the circulation to work their toxic effects. The most important post-scarlatinal phenomena are (1) rheumatism and (2) albuminuria. Dr. Mahomed has called attention to the correlation of these.[1] Both complications appear frequently to be induced by the same cause—constipation or chill. This is but a superadded difficulty to an already defective elimination. The blood surcharged with effete products reacting on the fibrous structures of the joints may induce the pain and swelling of articular rheumatism, or it may influence the pericardium or endocardium to produce pericarditis or endocarditis. Or the reaction of the poisoned blood may be more pronounced upon the kidney, and then we have transudation first of the crystalloids, afterwards of the colloids, into the urine. There is albuminuria and renal disease. When such condition is induced, even though there be no intervention of rheumatic phenomena, we have abundant clinical evidence of the probability of the occurrence of cardiac disease, especially pericarditis. The lesion of the kidney which follows scarlatina is exactly similar to the inflammatory form of Bright's disease, and we know that pericarditis is one of the most common complications of Bright's disease. Thus far, therefore, it seems to be much more probable that the disease of pericardium or of endocardium which is associated with scarlatina is due, not to the direct operation of the zymotic poison, but to a superinduced condition, which bears a striking relation with rheumatism.

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[1] Etiology of Bright's Disease and the Pre-albuminuric Stage.—*Medico-Chirurgical Transactions*, vol. lvii. page 197, and *Am. Journ. Med. Sci.*, April 1875, p. 486.

Dr. Sansom also concludes from the evidence before him that measles, like scarlatina, is an occasional determining cause of pericarditis and of endocarditis, and he believes that in both cases the heart disease is the indirect result of the zymotic poison.

Phlegmonous Gastritis.

Four cases of this rare disease—a description of which is to be found in "Niemeyer's Text-book of Practical Medicine," and in a more detailed form in "Ziemssen's Cyclopædia," in an article by Professor Leube—are published in the *Berliner Klin. Wochenschrift*, No. 38, 1879, by Dr. GLAX, of Gratz, and Dr. LEWANDOWSKY, of Berlin. There were autopsies in only two of the cases, so that the accuracy of the diagnosis must remain doubtful in the other two, especially as one of them recovered. All the patients were males, aged seventeen, forty-six, fifty, and fifty-two years respectively. The chief symptoms in each case were sudden severe vomiting, and pain in the abdomon, with great prostration. Only in the case which recovered was pus vomited; in the others bile-stained fluid was brought up. One case began with a severe rigor, and in this the temperature rose, during the seven days the patient lived, to 40·4° Cent. (104·7° Fahr.), with a pulse of 136, and respirations 36. In the case that recovered, the temperature for eight days ranged between 39° and 41° Cent. (102·2° to 105·8° Fahr.), with a very rapid pulse, and the whole course of the illness, which lasted a month, much resembled typhoid fever. In one case there was delirium, in another great restlessness, with a feeling of suffocation. In one of Dr. Glax's patients there was considerable enlargement of the liver and spleen, and he also had general peritonitis, with a good deal of inflammatory effusion into the abdominal cavity. The stomach in this case was the seat of diffuse purulent infiltration of its walls. In the second case that was examined post-mortem the infiltration was much less marked, and was partly purulent, partly serous. Its anterior and posterior surfaces were of a dark violet colour; and small punctate hemorrhages were scattered here and there over the mucous membrane. In two of the four cases the diseased condition may have been due to errors of diet (one patient had eaten large quantities of unripe grapes); in the third the patient was a hard drinker; in the fourth no assignable cause could be discovered for the fatal illness, and Dr. Lewandowsky, the family doctor, to whom the patient had been known for years, could remember no previous attack of any kind which might have been the starting-point of the final catastrophe. We have called phlegmonous inflammation of the stomach a rare disease. In 1876, indeed, Leube had only been able to collect thirty-one reported cases of it, including examples of the diffuse and the circumscribed forms. Dr. Lewandowsky thinks the total number of cases described up to 1879 but slightly exceeds forty. No doubt, however, it has not always been recognized. The diagnostic points which separate it from gastritis, gastro-enteritis, and circumscribed peritonitis, are, according to Deininger (*Deutsches Archiv für Klin. Med.*, Band xxiii.), three in number. First, the fever and general symptoms are much more severe than in these diseases; secondly, the pain is not aggravated by the patient's movements; thirdly, the gastric region offers a feeling of very much increased resistance. The diffuse form runs a more rapidly fatal course than the circumscribed form (gastric abscess); the latter may drag on for months, and kill the patient at last by exhaustion and slow fever. The treatment is at present, we need scarcely add, utterly unsatisfactory. Dr. Glax agrees with Deininger that the early use of cold gives the most rational chance of success in this direction. —*Med. Times and Gazette*, Nov. 22, 1879.

Renal Inadequacy.

At a recent meeting of the Medical Society of London (*Lancet*, Nov. 29, 1879) Dr. ANDREW CLARK read a paper on renal inadequacy, by which he means that state of kidney in which it is unable, without material diminution of quantity, to produce a urine containing the avarage amount of solids and of a specific gravity greater than 1014. The deficiency of solids chiefly affects the urea and uric acid. The urine was pale, almost invariably free from albumen, and deposited no casts. He did not profess to determine what was the exact pathological state of the kidney; but he conjectured that it was one of slight withering and induration, just as sometimes the skin is found withered, hard, and incapable of producing a true unctuous sweat. This renal inadequacy had, so far as he could see, no characteristic symptoms, and we found it out only by searching for a cause which should be found adequate to the explanation of the patient's trouble.

The symptoms and signs most commonly associated with renal inadequacy were flatulent dyspepsia; palpitation, with a very feeble and interrupted capillary circulation; a dry, shiny, waxy skin; numbness, tingling, cramps and pains in the limbs, occasional flushes, worry of brain, and general nervousness; sometimes thickening of the terminal joints of the fingers, and sometimes, but rarely, evidences of gout. One knew in a given case that these symptoms were due to renal inadequacy, not merely because there was a grave deficiency in the excretion of urinary solids, but because whatever diminished that secretion, or whatever added to the amount of solids to be excreted, invariably within a short time aggravated the patient's sufferings. Three things were of great importance in these subjects. They are exceedingly vulnerable; they repair very slowly the damage done by accident or disease; they bear very badly the shock, however slight, of surgical operations—a fact mentioned by Sir James Paget ("Clinical Lectures," p. 44).

As to prognosis, this state seemed capable of indefinite prolongation without serious secondary injury to the organism. Under unfavourable circumstances and bad management death might occur from some local inflammation, from cerebral or other hemorrhage, or from the so-called pyæmic fever springing unexpectedly out of some, perhaps trifling, surgical operation. He then enumerated what he considered the special characters and appearance of patients who had been the subject of renal inadequacy for over four or five years:—"They have at least a marked and striking physiognomy: they increase in flesh; they become puffy without being distinctly œdematous; the skin becomes drier, more shiny, and yellower; the features swollen almost to distension; the pupils are dilated; the lips and cheeks of a bluish red colour; the articulation deliberate and somewhat difficult, and the whole intellectual tone and manner subdued and slow." From one side the physiognomy was like that of pernicious anæmia, from another like that of chronic Bright's disease, and yet it seemed distinct from both.

As to treatment, much might be done by good management, by which he meant the adjusting of the quantity and quality of the food to the diminished excrementitious activity, the withholding of such agents as directly lessen the secretory power of the kidney, aiding the kidney in its work by making the supplementary excretory organs fulfil that part of the work which the kidney was unable to do, and generally by placing the patient in those conditions which would give the organism the greatest power for resisting the inroads of disorder, and for making sufficient compensation when complete repair was unattainable. The tepid bath, followed by vigorous friction, the use of warm clothing, and the avoidance of passing exposure to cold and damp, with gentle exercise daily in the open air, were indicated. The diet should be light; stimulants should be avoided except to the extent of one glass of claret or other light wine, twice a day. The medicines he had found most useful were small doses of arsenic with reduced iron at meals, and an occasional mercurial alterative. If digestion was disturbed, he discontinued the iron and arsenic, giving the patient bitters with alkalies between meals, and a mercurial alterative every third night for two or three times. He concluded by narrating a case which he first saw some years ago. By a strict adherence to a limited dietary, and by the use of purgatives and diaphoretics this patient improved so much as to consider himself quite well; whereas, when he was taking food and wine every two hours, it seemed that the more he took the worse he became. A very remarkable fact about this case was that as his supplies of food and wine were reduced, the patient's urine steadily rose in density from 1003 up to a very fair standard; and in three weeks he left town declaring himself quite well. When seen six months ago this patient seemed and declared himself to be quite well, his only complaint being that he could not relax his dietary without being ill.

On Salicylate of Soda for Urticaria.

Although Heinlein (*Aertzl. Intelligenzblatt*, 1878, and *Memorabilien*, Band xxiv. Heft 8, Sept. 30, 1879) represented nettle-rash as caused by salicylate of soda, yet PIETRZYCKI employed it successfully in three cases for this affection (*Prezglad Lekarski*, *Allg. Med. Centr. Zeitung*, 1879). 1. An unmarried lady, aged 18, suffered four days from urticaria. This affection recurred during two years three or four times in the course of the year. The eruption appeared on the whole body, and was most violent in the night, so that the patient looked as if she was swollen. Chilliness and a high degree of heat, as well as violent itching, took away her appetite and sleep. Quinine internally, and fomentations of vinegar and eau de Cologne, were recommended. The cold and heat ceased, but the eruption and itching recurred every evening. Fomentations with carbolic acid diminished the itching, but a prescription of salicylate of soda, in powders of 1.5 gramme three times daily, was successful, as, after taking two powders, the eruption and itching completely disappeared. 2. The same patient fell ill again three months later, and quinine was again prescribed, but even after 3 grammes had been taken, the affection persisted. Two powders, as in Case 1, however, completely cured the disease. 3. A woman, aged 21, somewhat chlorotic and with a bad digestion, suffered two days from urticaria, most severely in the night. As in this case, also, there was chilliness in the evening, she took quinine, but with very little success. Salicylate of soda, three doses of 1.5 grammes daily, cured the disease entirely. The patient suffered from noises in the ear under the treatment. The author believes that these three cases justify the conclusion that salicylate of soda is a very effective remedy for urticaria, if the dose is sufficiently strong.—*London Med. Record*, Nov. 15, 1879.

SURGERY.

Traumatic Aneurism of the Scalp.

At a late meeting of the Clinical Society of London (*Lancet*, Dec. 6, 1879) Dr. W. J. Tyson, of Folkestone, read notes of a case of Traumatic Aneurism of the Scalp of twenty-two months' duration. The patient, a man aged fifty-six, in September, 1875, whilst out shooting, was struck by a stray shot on the back of the head, causing at the time considerable hemorrhage. Sixteen months later there remained a hard and firm hemispherical swelling, the size of an ordinary walnut, without bruit or pulsation. It was situated between the right mastoid process and the occipital protuberance. Six months afterwards he again came to Mr. Tyson, the swelling having increased to the size of a small orange. Still no pulsation was to be felt or heard. Mr. Tyson made a horizontal incision across the tumour, and an accidental nick in the sac was followed by profuse hemorrhage. The tumour was removed and firm pressure applied. The bleeding recurred next day, and the vessel was ligatured. During treatment the patient had a mild attack of delirium tremens. The wound was completely healed seven weeks after operation. Mr. Tyson remarked that the posterior auricular artery was probably injured by the shot, and gave rise to the false aneurism, which was remarkable for its long duration, attributable probably to the unyielding condition of the surrounding scalp. The skin was not thinned over it. The diagnosis was obscured by the absence of pulsation or bruit, and in the operation the bleeding vessel could not be reached until the old clot was removed, and whilst doing so other vessels in the scalp were divided. Had the patient consulted a medical man at first, the vessel would probably have been secured, and all further trouble avoided, whereas he certainly ran some risk of his life.

Mr. Marsh referred to Mr. Willett's case, in which there was so great an absence of aneurismal characters that it was taken for a sebaceous tumour by the house surgeon. There was no bruit and no pulsation. The operation was accompanied by profuse hemorrhage, and Mr. Willett laid open the sac and secured both ends of the occipital artery on which it was formed. Mr. Savory, a few years ago, dealt in the same way with a traumatic aneurism of the dorsal artery of the foot.

Mr. Tyson, in reply, said that his case also was first thought to be a sebaceous tumour, and some difficulty was experienced in dealing with it. The longest duration of a traumatic aneurism on record was a case by Mr. Spence. The aneurism had lasted for seven years, and had been produced by a spike injury.

Trephining for Traumatic Epilepsy.

At a late meeting of the Royal Medical and Chirurgical Society (*Lancet*, Nov. 29, 1879) Mr. James F. West brought forward a case in which trephining had been successfully employed by him for traumatic epilepsy in a girl aged fourteen. The injury was due to a blow from a stone, which caused fracture of the skull and concussion of the brain. Since 1871, when it was inflicted, the girl had been subject to epileptic fits, which had year by year increased in number and severity, until they had at last reduced her to an almost idiotic state. Two circles of bone over the site of the depressed fracture (which was, however, found to involve only the outer table) were removed on Nov. 25th, 1878, with antiseptic precautions. From that date the girl began to improve; speech returned, also the power of controlling the bladder and rectum. Antiseptic treatment was discontinued on

Dec. 3d, and at the end of the month she left the Queen's Hospital cured, and from that time to the present she has had no return of the epileptic convulsions. Mr. West gave a brief *résumé* of the surgical writings on the operation of trephining for epilepsy, calling special attention to the work of Dr. Lucas Championnière on the subject—"La Trépannation guidée par les Localisations Cérébrales" (Paris, 1878),—and to the valuable paper by Dr. Echeverria on "Trephining for Epilepsy depending upon Injuries of the Skull," in the *Archives Gen. de Médecine* for December, 1878. Mr. West considered that the trephine might be applied with advantage in many cases where epilepsy was dependent on a traumatic origin; that there were, owing to recent discoveries in physiology, valuable indications to be derived as to the exact nature of the lesion and the site at which the operation should be performed; and, lastly, that with antiseptic precautions trephining might at the present day be performed with a greater prospect of success than formerly, and might therefore be looked upon as a justifiable operation.

Dr. ALTHAUS said the case was of interest physiologically, although he doubted whether the practice would often require to be followed, so rare are cases in which epilepsy can be traced to injury. From fourteen years' experience at a hospital devoted to epilepsy, out of 3000 cases, he had not seen one presenting injury of cranial bones with depression, and in cases where a history of a previous injury suggested recourse to trephining, he had found relief and cure follow the administration of large doses of iodide of potassium. He regarded the broad question of cerebral localization as now settled, although modifications might, with increasing knowledge, have to be made in details. It was singular that in this case an injury on the right side of the skull should have given rise to aphasia; but still, cases of aphasia are recorded in which the third left frontal gyrus was not affected, such being explicable on the view of the bilateral function of the brain. He doubted if the theory of the localization would prove a safe guide in determining the seat of operation, for in this case, on that view, the left parietal region should have been trephined and not the seat of injury to the skull. As to trephining, he mentioned that M. Gosselin was greatly opposed to it, having had most unfavourable results from septicæmia. M. Lucas-Championnière's dicta seemed to be based rather upon an enthusiasm for physiological results than upon practical experience.

Mr. BELLAMY referred to a patient now under the care of Dr. Lees at Charing-cross Hospital, where he had trephined over the fissure of Rolando. The case was one of epilepsy due to injury thirteen years before, and the fits were very frequent. With Dr. Ferrier's assistance, they determined the site of the fissure of Rolando (which happened to be just at the seat of injury), and the result of the operation was very satisfactory, the fits ceasing ; but recovery was complicated by the formation of an abscess. Dr. Lees intended to read the case before the Clinical Society.

Mr. ADAMS thought the good result in Mr. West's case difficult of explanation, seeing that there was no depression of the inner table, as happened to the often-quoted case of the elder Cline. When Mr. Adams was dresser to Mr. Green at St. Thomas's Hospital, he saw that surgeon's case which had been referred to in the paper. The patient was a girl about ten years old, who, at the age of four, had received some injury to the head. She was admitted for fits of a cataleptic kind, and a depression on the parietal bone being found, Mr. Green trephined over the spot. Unfortunately, a large laceration of the dura mater was found; hernia cerebri took place, and the patient died. A few years ago Mr. Adams had under his care at the Great Northern Hospital a man suffering from repeated fits following a depressed fracture of the skull. Wishing to trephine, but not agreeing as to the site of the operation, Mr. Adams put the man on large doses of antimony (quarter of a grain every three hours), according to the rule laid down by Stromeyer, and the patient recovered.

Mr. HUTCHINSON said they must be much obliged to Mr. West for his case, and for the evidence he had collected. The occurrence of aphasia and right hemiplegia need not be set down to the direct effect of the injury in the right temple; it was extremely probable that at the same time the patient sustained a lesion of the brain by contre-coup on the opposite side, and the epilepsy should be considered apart from the rest of her symptoms. Mr. West's case conveyed the important lesson about the seat of trephining that localization should not be too much depended on, but that the old rule should be followed—viz., to trephine over the seat of injury to the skull. He agreed with Dr. Althaus that such cases as these were not at all common. No conclusions could be drawn from rough statistics of trephining, including cases which are desperate from the first, and would die whether trephined or not. No useful purpose could be served from the comparison of these with other cases in which recovery ensued, the injuries being far less grave. There was no single operation in surgery that had been so much discredited as this from the conclusions based on such rough statistics; and if trephining is to come into vogue again it will be when surgeons abstain from resort to it in cases obviously hopeless, and reserve it for cases where there is no evidence of irreparable brain injury. Mr. Hutchinson concluded by advocating the operation in cases of compound depressed fracture in anticipation of the occurrence of cerebral inflammation and before the onset of symptoms denoting it. He had often followed this practice, and with exceedingly favourable results.

Mr. GAY referred to a case where mental disturbance followed on an injury to the skull. The patient was a man who was brought into hospital after an attempt to drown himself, and whilst in the hospital he succeeded in committing suicide by cutting his throat. Five years before he had received an injury to the skull in the right parietal region, followed by some necrosis, but ever after he became more despondent and suicidally inclined. At the autopsy the outer table was wanting beneath the cicatrix in the scalp, and the inner table was found to be driven in and adherent to the dura mater, a portion of which passed out through a fissure to unite with the scar-tissue outside. Beyond local thickening of the membrane and a depression in the brain at this spot, the brain was perfectly natural. Had the man lived, probably trephining would have been attempted, but the case was one in which it was difficult to say what locality of the brain was injured. A curious point was that whenever pressure was made over the seat of injury he had mental hallucinations, and always of the same kind. It was no doubt the surgeon's duty to trephine in cases of traumatic epilepsy, but he argued that the primary operation was far more successful than the secondary, which was often very dangerous.

Mr. HOLMES referred to a case which did not bear out what had been said as to the harmlessness of trephining in these cases. Many years ago he saw a case under Mr. Johnson, in which trephining was performed for the relief of epilepsy that had ensued upon an injury to the head received some time previously. The dura mater was lacerated, and the operation proved fatal from meningitis. Examination revealed the presence of chronic meningitis, also showing how hopeless would have been the chance of any relief from the operation; and the dura mater was torn, owing to its adhesion to the bones. Mr. West had referred to the great difficulty in diagnosing the condition of the skull and brain. In his case the dura mater was found to be healthy, and the bone not depressed. In another case the issue might not be so favourable, and, with all possible respect to antiseptics and modern surgery, he could not think trephining other than a most serious operation.

Mr. F. DURHAM, when surgical registrar at Guy's Hospital, had seen two cases of trephining for traumatic epilepsy. One case, under the care of Mr. Cooper Forster, was quite successful, all convulsions ceasing; no bad symptoms followed, and antiseptics were not employed. The other was a case under Mr. Howse, and the operation was performed strictly on antiseptic principles. The patient, a lad of nineteen, had no bad symptoms after the trephining, which, however, had not much effect in controlling the fits. The one case was a fracture; the other necrosis and exfoliation of bone.

Mr. BRYANT asked if less severe measures than trephining might not sometimes be of service. Two years ago he had under his care a man suffering from epileptic attacks and localized pain in the head, following an injury received five years before, which produced a scalp wound and partial concussion. The pain appeared a few months after the injury, and had never left him. Examination showed what appeared to be a depression of the skull beneath the scar. On incision over this spot the bone appeared perfectly natural, no fissure or depression, so that Mr. Bryant did not resort to the trephine; but the pain and convulsions left the patient from that time, a result which could only be attributed to the incision down to the bone. He had had two other cases of almost similar kind, in both of which fracture was supposed to have taken place some years before, and in both perfect relief to symptoms was obtained by a free incision down to the bone. Such cases sufficed to raise the question whether it was right to proceed further than this in dealing with them, for he agreed with Mr. Holmes that trephining was a dangerous operation. There was always a risk in it of injuring the dura mater. Still he was disposed to agree with Mr. West that in certain cases of traumatic epilepsy trephining should be practised. One such case was brought to him by the late Dr. Dickson, and the fits were entirely relieved by the operation. In this case the bone and the dura mater were thickened. The patient died three years later from some intercurrent disease, and prior to his death there was a slight renewal of the fits.

Dr. DOUGLAS POWELL asked the author whether he attributed the epileptic attacks to direct lesion of the brain at the seat of injury, or as of reflex nature, the injured part exciting the convulsions, just as a carious molar tooth might. He had had under his care at the Middlesex Hospital a young epileptic lad, presenting an exostosis on the tibia, which had followed a wound produced by a kick in this region. The epilepsy had come on since the injury, the paroxysms being preceded by an aura starting from this part of the tibia. Sometimes the aura did not pass beyond the thigh, when no general convulsion followed. He asked Mr. Hulke to see the case, and he removed the piece of bone. At first the epilepsy was not materially affected, but, after a few weeks, the interval between the fits became longer, and it seemed possible that the mere removal of this "exciting cause" might result in cure. He therefore asked Mr. West whether, in trephining in his case, his object had been to remove a distal source of irritation, or to relieve the brain from direct pressure.

Mr. WEST in reply said that he would not pretend to argue from a single case, but the subject was one now attracting much attention, especially in France. Although the case might not lead surgeons to trephine in all cases of traumatic epilepsy, yet it was a justifiable measure in this instance, for the girl was advancing towards death; she was in a condition of idiocy, and had lost control over bladder and rectum. He certainly thought at the time that he would have found a fracture of the inner table irritating the dura mater, and was surprised to find nothing of the sort, although he removed a second circle of bone. The result, however, showed, whether *post hoc* or *propter hoc*, that in some way or other the operation relieved the symptoms. In a few days she could speak, became sensible, and now for a year after she has been quite free from fits. In reply to Dr. Althaus he thought that possibly more cases of epilepsy are due to injury than we are aware of. Children are most apt to receive injuries, disregarded at the time, but often leading to grave mischief subsequently. How many cases of spinal caries or hip disease can be actually *traced* to injury, yet who could doubt that traumatism was a most frequent source of them? So, many an epilepsy, showing itself first at the age of fifteen or twenty, might have for its starting-point an injury inflicted in childhood. The case had been treated medicinally by Dr. Heslop before coming under his (Mr. West's) care, but with no effect. He was not sure that much benefit could be hoped for from iodide of potassium in such cases. He had not cited all authorities, and was aware that Gosselin was a decided opponent to trephining. He doubted the occurrence of fracture by contre-coup, certainly very uncommon. He agreed with Mr. Hutchinson as to the fallacies of statistics, but he thought they should not be wholly neglected. He would rather wait for symptoms to appear before trephining, than operate in order to prevent their occurrence. The operation was certainly dangerous, but, with antiseptics, there was far less risk than without. He could not say positively whether the success was due to the operation or not, but he believed it was; he could not see on what principle simple incisions into the scalp could operate. There was no doubt that in his case the epilepsy was due to reflex irritation following a fracture of the outer table of the skull, and not to direct pressure on the brain or its membranes.

Cholecystotomy for Dropsy of the Gall-Bladder due to the Impaction of Gall-Stone.

At a late meeting of the Royal Medical and Chirurgical Society (*Lancet*, Nov. 15, 1879), Mr. Lawson Tait read a paper based on a case of cholecystotomy. He referred to the success attending ovariotomy as leading to the adoption of abdominal section for other pelvic and abdominal tumours likely to affect seriously the life of the patient, unless of a cancerous nature. Dr. Handfield Jones had the merit of first suggesting the extension of it, particularly to cases of threatened death from gall-stone impaction. Dr. Marion Sims was the first to follow out the plan, but unsuccessfully, and the present case was the first successful one.

The patient had been married eighteen years, had borne six children, and menstruation was normal and health good till the summer of 1878. At that time she had spasmodic pains in the right sides aggravated by walking and lifting slight weights. A swelling, noticed in September, slowly increased, and during last winter pain became more intense, and she presented a cachectic appearance, suffering from incessant headache, sickness, and obstinate constipation. The seat of pain was over the right kidney, where there was a heart-shaped tumour, firm and elastic, without fluctuation, tender to the touch, and movable towards each side. The urine gave only negative results.

At a consultation with the author's colleague, Dr. Edginton, no decided diagnosis was attempted, and the opening of the abdomen was agreed upon, which was performed on the 23d of August, in the middle line, to the extent of four inches. The tumour was found to be a distended gall-bladder, containing a white starchy-looking fluid, and two large gall-stones, one lying loose, and the other impacted in the entrance of the duct, and adherent to the mucous surface. The latter was removed after a tedious and very difficult operation (fully described in the paper). The stone and fragments weighed 6.11 grammes. The wound in the gall-bladder was stitched to the upper end of the wound in the abdominal walls by continuous sutures, leaving the aperture into the bladder quite open, and closing the rest of the abdominal opening in the usual way. The operation was performed antiseptically under ether. The patient rallied completely in a few hours, and the dressings of the wound were found stained with healthy bile. The flow of bile from the wound continued till Sept. 3d. The wound was completely healed on Sept. 9th, when the patient began to take solid food; up to that time the diet had been restricted to milk and beef-tea. On the 30th she went home quite restored to health. A temperature chart indicated the evenness and rapidity of the recovery. An entire absence of symptoms of gall-stone rendered an accurate diagnosis impossible, but this was of less importance as late improvements in abdominal surgery made an early exploratory incision for ascertaining the true nature of the disease feasible. The author, in stating that he always used rigid antiseptic precautions in his abdominal sections, expressed some doubts as to his success being attributable in any way to them.

Dr. COUPLAND pointed out that cases (such as that related) of impacted calculus in the neck of the gall-bladder, with consequent dropsy of the viscus, belonged to a different category from those of calculi obstructing the common duct. In the former class no jaundice occurred, for the common duct was not occluded, and often no symptoms denoted the condition, which he had more than once met with as a post-mortem discovery. The important point was whether surgical interference was warranted in the second and graver class of cases—impaction in the common duct; and whether, if such interference were justifiable, it would have as reasonable a chance of success as in the former class. *A priori*, the risk should be much greater, from the difficulty of extraction owing to the smaller size of the gall-bladder, and the greater likelihood of extravasation of bile into the peritoneum.

Mr. HULKE said that the credit of first advocating such a procedure in this country was due to Dr. Handfield Jones; but in 1743 Petit published an admirable memoir on this very subject, and with the same intent. In that memoir Petit draws a parallel between disorders of the gall-bladder and those of the urinary bladder, and urges the feasibility of the extraction of biliary calculi. Mr. Lawson Tait's case was a similar one to Petit's one where the obstructing calculus was lodged in the cystic duct. In such cases the gall-bladder becomes converted into a mucous cyst; it gets filled with secretion from its lining membrane. Many specimens illustrative of this condition had been shown at the Pathological Society—a condition far different to deal with than that where the viscus is distended with bile.

Mr. H. MORRIS said that in the case published by Dr. Marion Sims (which, although primarily successful, afterwards proved fatal) the success was attributed to the use of the antiseptic method, and Dr. Sims adds that the step taken would have been unjustifiable without the use of such precautions. But at the Bath meeting of the British Medical Association, before Dr. Sims's case was published, Mr. G. Brown related a case in which the operation lasted for eighty minutes, and where, although adhesions were broken down, the gall-bladder was not directly opened. Soon, however, fluid began to ooze out, and the patient recovered, Mr. Brown justly remarking that had his operation failed it would have been attributed to his non-employment of antiseptics. Mr. Morris confirmed Mr. Hulke's remark as to the advocacy of the operation being made before Dr. H. Jones urged it as a measure to force down calculi through the duct into the duodenum. In 1858 Dr. Thudichum suggested the same operation at a meeting of the medical society under the presidency of Mr. Hilton, who thought the procedure justifiable, and who referred to a case where such an operation had been done. Mr. Morris asked whether much hemorrhage followed the incision into the abdominal wall in Mr. Tait's case; for in Sims's case and one by Keen[1] of Philadelphia, where the incision was made away from the median line and directly over the tumour, there was considerable hemorrhage. He also asked whether in the progress of the case the contracting gall-bladder produced much traction on the abdominal wall.

Mr. SPENCER WELLS said that several years ago he was consulted about the removal of gall-stones in a case where the operation was discountenanced, and, as it proved, correctly, because there was thought to be cancer present. At that time he considered that an opening by potassa fusa caustic would be preferable to the knife, and he should still, if such a case presented itself, prefer to adopt the former plan. He congratulated Mr. Tait on the issue of his case, and asked how long the bile continued to flow from the wound.

Mr. BARKER asked whether, as a rule, impaction of a stone in the neck of the gall-bladder was followed by jaundice. In a case he had brought before the Pathological Society where a large stone gradually escaped into the ileum and there produced fatal obstruction, there was no trace of jaundice at any time. The late Dr. Murchison had told him that it was not usual to have jaundice when the calculus was lodged in the cystic duct.

Mr. LAWSON TAIT could not say whether jaundice occurred in such cases. He had always thought the calculi were formed in the gall-bladder and thence passed down the ducts. Mr. Hulke's remarks showed how careful one should be in bibliographical research; and he must confess that he had gathered his knowledge of the history of the operation from Dr. Sims's paper, where the priority of the idea is given to Dr. Jones. There was no amount of hemorrhage in the operation, and he attributed that to his following the rule of making all abdominal incisions in the linea alba. Only the day before he was compelled to depart from this rule and to make a small incision to the side of the median line in order to reach a large hydatid cyst, and the bleeding from the small wound was much greater than that from a long incision he had also made in the median line. In his case no traction was produced by the shrinking gall-bladder. The flow of bile from the wound continued as long as this was open—that is, as long as the antiseptic dressings were left applied.

A Case of Uretero-Uterine Fistula cured by Extirpation of a Kidney.

The following case is recorded by ZWEIFEL, of Erlangen, in the *Archiv für Gynäkologie*, Bd. xv. S. 1. The patient, a sufferer from contracted pelvis, had been five times delivered, each time with difficulty. On the fifth occasion delivery was effected, as in most of the others, by forceps. This was complicated with laceration of the cervix, and led to the establishment of a uretero-uterine fistula. There was constant dribbling of urine through the os, with, at the same time, normal filling and evacuation of the bladder. The diagnosis was established beyond reasonable doubt by catheterization of the ureter, through the bladder. It was found quite easy to catheterize the right ureter after dilatation of the urethra by Simon's speculum. The left ureter could not be catheterized, although the experiment was repeatedly made. On each occasion the right ureter could be catheterized without difficulty. After injecting coloured fluid into the bladder, only a drop could, after a time, be seen at the outer os. Various means to obtain relief having been tried and found ineffectual, there remained only two feasible proposals—viz., either to obliterate the vagina after the formation of an artificial vesico-vaginal fistula, or to remove the entire left kidney. The patient and her friends objected to the first method, and preferred to risk the second. This Zweifel performed by the extra-peritoneal method. His incision externally extended from the eleventh rib to close upon the crest of the ilium. The deep incision was then continued along the outer edge of the erector spinal mass, and outside the quadratus lumborum. The latter muscle was, accordingly, not cut into. There was some difficulty in enucleating the kidney from its situation, through want of room for the hand, but this was ultimately effected with the help of a Nélaton's forceps. The ureter and renal vessels were tied separately by passing an aneurism needle, armed with a carbolized silk ligature, between the ureter and the vein. Care was taken not to cut the kidney substance too close to the ligatures, so as to avoid any tendency in them to slip. The wound was sewed up, all except the lower edge, through which the ligatures were taken. Antiseptic precautions of the strictest character were observed throughout the operation and in the after-treatment. The case went to a successful termination, notwithstanding that an abscess formed in the track of one of the deep sutures, into which a small drainage-tube was passed, which became incarcerated in the wound. The patient recovered without any symptoms of injury. There was no cardiac hypertrophy, nor indication of urinary disturbance from the operation. The right kidney appeared quite sufficient for the wants of the economy.

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[1] Am. Journal Med. Sciences, Jan. 1879, p. 134, and April, 1879, p. 575.

Zweifel proposes, after Heineke, to introduce the term nephrectomy for complete removal of the kidney, and nephrotomy when the kidney is merely cut down upon for the removal of calculus or other cause.—*Edinburgh Med. Journal*, Nov. 1879.

Tubercle of the Urinary Organs.

Dr. TAPRET terminates an article in the *Archives Générales* for October with the following conclusions: 1. Tubercle of the urinary organs is of more frequent occurrence than is supposed, if we are to judge by the small number of cases that have been published. It appears usually between the ages of sixteen and forty, and is rare in the female. 2. Tubercle may occur primarily in the kidney, bladder, prostate, and urethra, remaining stationed there, or becoming propagated in the course of a longer or shorter time, and after periods of arrest, to the genital organs, or invade the lung. Urinary phthisis is rarely associated at once with other manifestations of the diathesis. 3. When the disease commences by the kidney, its onset is insidious; on the contrary, its invasion of the neck and trigone of the bladder is usually indicated by frequent and painful irritation, hæmaturia, pus in the urine, etc. 4. The symptoms of vesical tubercle are grouped in a variable but regular order, and although some may be wanting, they constitute a characteristic morbid assemblage. 5. Its course, usually chronic, may be precipitated by the rapid or slow invasion of the testis or of the lung, rarely of the peritoneum or meninges. In spite of its periods of quietude, of greater or less length, it leads to consumption, and uræmia may terminate the scene. 6. The diagnosis is based on a thorough appreciation of the value of each symptom, direct exploration being employed only as a means of confirmation, and as rarely as possible. 7. Tubercle of the kidney, bladder, prostate, and urethra presents the same stages of evolution as that of the lungs, peritoneum, meninges, and testis. 8. Its treatment is that of tuberculosis in general, modifying injections being employed in some cases. The most painful symptoms may be assuaged by morphia. 9. The appearance of urinary tuberculosis may put us on the way of other varieties, and furnish valuable indications as to the nature of certain morbid phenomena of the pulmonary and genital organs.—*Med. Times and Gazette*, Nov. 29, 1879.

Litholapaxy, with the Report of a Fatal Case.

At a late meeting of the New York Pathological Society (*Med. Record*, Dec. 20, 1879) Dr. E. L. KEYES presented specimens of five urinary calculi removed from five old men averaging over sixty-six years of age. The largest stone weighed 540 grains, and was removed by Thompson's washing-bottle in fifty-seven minutes, all told. The smallest stone weighed ninety-eight grains dry. It was removed in nineteen minutes. Dr. Keyes used his own modification of the lithotrite for crushing the stone in every case. Thompson's newest improvement in the washing-bottle was used in the last case. These stones made a series of twenty consecutive operations of rapid lithotrity performed by Dr. Keyes in connection with Dr. Van Buren. There had occurred one death. It was the fourth of the last five of the series. The bladder and kidneys were shown. This patient was a gentleman of sixty-seven. He was known to have pyelitis and kidney disease before the operation. His urine was very light, and contained casts and albumen besides the pus. The patient had been confined to bed by his maladies nine months. The stone had not been discovered. Dr. Keyes concluded to attempt rapid lithotrity as being the only operation offering the patient any chance. The bladder was pouched toward the right ureter. Thirteen minutes were consumed in catching the stone for the first time, and a seizure was only finally effected by turning the patient well upon the side. After one hour of manipulation, rendered very unsatisfactory by the pouched condition of the bladder, the sitting was terminated; one hundred and ninety grains were removed. No chill or serious consequence followed, and it was decided after three weeks, to undertake another sitting.

The second sitting lasted one hour. Debris, weighing when dry twenty-eight grains, required one hour for their removal, it being next to impossible to get the last fragments out of the pouch. An increase in the quantity of pus in the urine followed with almost total suppression, and death on the fifth day.

The right kidney was of about one-half its normal size, and the seat of interstitial nephritis. The left kidney was of full size, but similarly diseased, although to a less extent. Each kidney pelvis contained about a gill of thick pus, the left one some fragments of phosphatic stone. Both ureters were thickened and dilated. The urethra was healthy. The prostate was the seat of some central enlargement. The bladder was smooth and uncongested. It showed no evidence of violence. The mucous membrane was unbroken. The pouch at the site of the entrance of the right ureter into the bladder was very evident. The walls of the bladder were much thickened. Dr. Keyes maintained in this case that the patient's diseased condition was the cause of death, a catastrophe precipitated undoubtedly by the operation. He still believed, however, that the latter was justifiable under the peculiar circumstances of the case. In one very similar case, the same operation had been entirely successful at his hands. In the present instance, as shown by post-mortem examination, the operative manœuvres had not resulted in any direct physical lesions.

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On the Treatment of Fractures.

The peculiarities of the treatment of subcutaneous fractures of the bones of the extremities at Greifswald Hospital consist in nearly always fixing the broken limb in a plaster bandage. The usual pasteboards are applied to the smaller bones, but to the large bones of the extremities only temporarily, if plaster cannot be had at once. Dr. MAX SCHÜLLER maintains that no bandage can be fixed so well as the plaster bandage: but its frequent inspection, and even renewal, are necessary, especially when considerable dislocation and effusion of blood have taken place. In this hospital, plaster bandages are also applied to compound fractures, but in connection with salicylic jute bandages. Dr. Max Schüller prefers the frequent renewal of the bandages, as the wound can then be disinfected and the whole limb thoroughly washed; because he regards the antiseptic cleansing of the fracture as particularly important. Dr. Max Schüller also recommends adequate drainage, even if fresh openings for the drainage-tubes have to be made, in order that the secretions may flow freely from the wound to the surface. In extensive fractures, in which disinfection can only be effected by removing all splinters, Dr. Max Schüller places a drainage-tube through the fractured locality itself. The drainage-tubes, however, may be removed, or at least shortened, after a few days. The bandages are changed under the application of spray, first every third or fourth day, but, after the first week, they can be left five, and, later, eight days. When the wound is healed, a plaster bandage is used for a long time to complete the consolidation. The chances of preserving a useful limb have been considerably increased by the antiseptic treatment, but even in unsuccessful cases this treatment makes the later necessary amputations less dangerous. In cases of compound fractures in which amputations are necessary, the adjacent joints have nearly always to be fractured simultaneously, or some parts of the extremities, whole masses of muscles, etc., have to be torn off. —*London Med. Record*, Nov. 15, 1879.

Treatment of Fracture of the Patella by Opening the Joint and Wiring the Fragments.

At a late meeting of the Medical Society of London, Mr. ROSE read notes of two cases of transverse fracture of the patella by muscular action, with separation of fragments, treated by him at the Royal Free Hospital by cutting into the joint antiseptically and wiring the fragments together.

Case 1 was that of a female aged thirty-two, stout and full habit of body, admitted Aug. 9th. The fracture was caused by her making an effort to save herself when falling from a cart. Rapid and excessive effusion into the joint followed, and, her leg being very fat, it was difficult to estimate the exact separation of the fragments, but it was about two inches. Mr. Rose operated on August 27th. The strictest antiseptic precautions were taken. The joint was opened by a longitudinal incision five inches long, over the middle and anterior aspect of the knee. Much dark coagula were squeezed out of the joint. The patellar fragments were then set free a little from their lateral ligamentous attachments, but only sufficiently so to get command over them for drilling. The fractured surfaces were thickly coated with organizing material, but there was no continuity between that on one surface and that on the other. A thin slice was taken from each fragment to expose the bony structure, and two holes were drilled in each obliquely one inch apart. Care was taken, first, to bring out the point of the awl close to, but not through the articular cartilage, so that the wire sutures should be entirely extra-articular when passed; secondly, to make the two holes in the upper fragment correspond with those in the lower. Thick silver wire sutures were then passed, which were gradually tightened, the rectus being well relaxed by flexing the thigh on the pelvis. In this way the fragments were brought into accurate apposition. A counter opening was then made on each side of the joint at the most dependent part, and skeins of horsehair drawn through to act as drainage. Bleeding was easily stopped, the wound was closed by carbolized silk sutures, the ends of the silver wires were cut about half an inch above the skin level, and antiseptic dressings applied, and a back splint. When the patient was placed in bed, the limb was kept raised on an inclined plane to release the rectus. The after progress was most satisfactory. The temperature never rose above 99°, nor the pulse above 90. The dressings were changed only eight times; the last thread of horsehair was removed on the twentieth day after the operation, and the wires cut down on and taken out on the sixth week.

Case 2 was that of a man aged forty-one, a butcher, who broke his right patella in a similar manner on August 9th. Mr. Rose operated as in the former case, and on the same day. The details were alike in each case. Both patients were shown to the Fellows, and in each case bony union had taken place. The man could bend his knee to a right angle, could walk upstairs, and had evidently free use of the rectus muscle. In the woman the movement was limited.

Mr. W. ADAMS thought the results most encouraging and instructive, and maintained that no other method could yield such results. In his original paper in the third volume of the Pathological Society Transactions he showed, from an examination of specimens in the London museums, that an ununited fracture or a feeble ligamentous union was the rule, and that a firm ligamentous union (almost as good as bony union) was the exception. He had found Malgaigne's hooks useful; they lead to a stout ligamentous union. In the present cases bony union had taken place.

Mr. BRYANT would divide cases of fracture of the patella into two classes—old and recent. In old cases, where the limb is almost useless, it is justifiable to run some risk in order to cure the patient, and in such cases he should consider the operation as detailed by Mr. Rose a safe and justifiable one. But in the second class of cases, are the results obtained by the ordinary methods of treatment so unsatisfactory that a severe operation should be at once adopted? Is it the rule to have a useless limb after a fracture of the patella has been treated in the ordinary way? Is it not a fact that the patient may get about very well, although there may be considerable separation of the fragments? He cited the case of a coal-porter, who was able to walk over a plank or go up a ladder with perfect ease, although the separation of the fragments in the case was nearly four inches. Is it then justifiable to open the joint before less severe treatment has been tried? The result in the man's case was very good; that in the woman's was not so good as he had often seen on the ordinary plan. He considered the plan adopted by Mr. Gould, of dividing the quadriceps tendon, to be very useful.

Prof. LISTER said that Dr. Hector Cameron, of Glasgow, was the first to perform this operation for fracture of the patella. He had himself previously operated on an old fracture of the olecranon; the joint was useless, owing to the great separation of the fragments; and the operation resulted in perfect cure of the joint. He strongly deprecated the adoption of this operation by any surgeon who did not thoroughly understand the antiseptic treatment. He did not agree with Mr. Smith and Mr. Bryant that the operation should not be done in all cases where the antiseptic treatment can be properly carried out. The risk a patient incurs in having his knee-joint opened antiseptically is not greater or so great as that attending the removal of an ordinary fatty tumour without antiseptic treatment. He believed, however, that in one case he had succeeded in getting osseous union in fractured patella by the treatment usually adopted. Still, if this operation gave the best results, it should be generally followed.

Mr. ROSE stated that a case in which Malgaigne's hooks were used in King's College Hospital, some years ago, ended fatally from erysipelas. It is impossible to get the fragments together accurately, without tilting, by any extra-articular method, or by subcutaneous division of the rectus. Why not perform the operation in recent cases, rather than wait until the rectus has had time to become weaker and shorter, and the usefulness of the limb impaired? In the case of the female he had shown, the movement was not so good as it would have been had she permitted him to manipulate it freely. As, however, she had now consented to have it moved under chloroform, he hoped to be able to show the case to the Society on some future occasion.—*Lancet*, Nov. 22, 1879.

OPHTHALMOLOGY AND OTOLOGY.

On Sclerotomy in Different Forms of Glaucoma.

Dr. DE WECKER, of Paris, in some remarks on this subject which he made at the recent meeting of the British Medical Association (*British Med. Journal*, Nov. 22, 1879), said that in all the sclerotomies which he had lately performed, he has used a narrow Gräfe's knife, which he found more suitable in cases of shallow anterior chamber than the sclerotome which he formerly recommended. Moreover, as also Mauthner has recommended, he does not confine himself strictly to the formation of a flap two millimetres high, of which the middle third is left undivided. But, especially if the depth of the anterior chamber permit it, he forms a flap of from three to four millimetres high. The knife should penetrate the sclerotic very precisely at a distance of one millimetre from the clear cornea, and then, the blade being held perfectly parallel to the plane of the iris, it should be passed very slowly in front of the latter, so that the counterpuncture may fall also exactly at a distance of one millimeter from the internal border of the cornea. If the blade be not held quite parallel with the plane of the iris, there is danger that it may pass through the cornea, and that the sclerotomy may be but half performed; or, if it be directed too deeply, it may come out through the sclerotic at an exaggerated distance from the cornea, may wound the ciliary body, and may provoke troublesome hemorrhage and irritative symptoms of an alarming kind. A complete curative effect should not be expected from sclerotomy unless it is performed strictly *lege artis;* and, in order that this may be, it is necessary that the operator should have the proceeding at his fingers' ends. He would like every practitioner to be convinced that it is only after a certain apprenticeship that good and precise sclerotomies can be performed. The section should be made by slow sawing movements, leaving exactly one-third of the flap undivided.

In describing the results which he has obtained from sclerotomy, Dr. De Wecker is especially anxious to point out in what way they differ from those of iridectomy. In the first place the new operation admits of much greater freedom in the after-treatment. The patients, being provided with a bandage, may return home, and can, for the most part, resume their occupations upon the second or third day afterwards.

Having examined the acuteness of vision of the greater number of his patients upon the day following the operation, and the field of vision two or three days afterwards, he is in a position to state that an improvement was evident in most cases, and that in no instance was there a deterioration of vision. In one case,[1] where he had to deal with a chronic irritative glaucoma, which, when the other eye was found affected with retinal apoplexies, was recognized as of a hemorrhagic nature, the vision after the sclerotomy was found considerably diminished in consequence of a hemorrhage situated at the macula lutea; but yet this disturbance of vision was of short duration only.

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[1] He mentions the case of a medical man affected with insufficiency of the aortic orifice, who was operated on for attacks of glaucoma, and on the day after the operation saw his patients, but on the fifth day a copious hemorrhage took place into the anterior chamber.

When, after sclerotomy, the anterior chamber is only slowly re-established, an alteration in the refraction of the eye may be observed, owing to displacement of the crystalline lens; but we have not found astigmatism to become developed, as often happens after iridectomy, putting the patient in a very uncomfortable position. In short, sclerotomy, except for a slight transitory change in the refraction, leaves the operated eye absolutely intact, with but a short period of irritation.

MIDWIFERY AND GYNÆCOLOGY.

On a Case of Quintuplets.

Dr. Volkmann (*Centralblatt für Gynäkologie*, Sept. 13, 1879) was called to Frau S., aged 27, who had previously had two living female children. Labour had begun at eleven o'clock in the morning, and at half past nine in the evening the first bag of waters broke. Immediately afterwards, the first child, presenting with the vertex, was born. On examination *per vaginam*, the second bag of waters could be felt distended. This burst with the next pain, and the second child was rapidly expelled head first. The third was expelled in a similar manner, after which the labour-pains subsided for a while. The pains presently returned, and the fourth child was expelled in the same way as the others. A few minutes later the fifth child was expelled *en masse*, with its placenta and bags of waters unbroken. This was soon followed by the expulsion of two more placentæ, one large and one small. The uterus contracted spontaneously, and there was no bleeding. The children were all well formed; the first four were of the male sex; all breathed, but only lived a few hours. The last, the female, lived the longest, five hours. They appeared to have had about six months and a half of intrauterine life. The first three were in one bag, and the three placentæ were joined together. The fourth and fifth children had each a separate chorion and placenta. The lying-in and recovery were without any complications.—*London Med. Record*, Nov. 15, 1879.

Difficult Labour from Distension of Fœtal Bladder.

Prof. Comelli relates in the *Weiner Med. Woch.*, September 13, the following case which occurred at the Obstetrical Clinic of Trieste: A woman, aged thirty-six, pregnant for the second time, was admitted January 23, suffering somewhat from dyspnœa in consequence of the enormous size which the abdomen had attained. On an internal examination being made, it was found that, although no signs of commencing labour were present, the wall of the cervix was thinned, the vaginal portion dilated, and the os open. Such a condition is common enough in women who have borne several children soon after each other, but is of extreme rarity in a woman pregnant only for the second time, and still wanting three weeks of her full time. It was, however, afterwards accounted for in this case by the fact of the uterus having become so greatly distended by hydramnios; and such distension having taken place during the earlier months of pregnancy at the expense of the fundus and body of the uterus, these parts did not admit of further thinning, so that the remaining enlargement of the uterus took place at its lower segment. But what excited the greatest attention in this case was the enormous size of the abdomen. A superficial examination showed that this arose from the great quantity of the amniotic fluid.

The labour came on January 24. The first pains lasted sixteen hours before the child's head had entered the pelvis in the second position, and on examination the uterus was found enormously distended. The height of the uterus lying in the region of the stomach was 56 centimetres, and the distance from the umbilicus to the symphysis was 30 centimetres. The circumference of the abdomen measured 115 centimetres, or about 20 centimetres more than usual—although the woman had not reached her full time by three weeks. The second period lasted fourteen hours—a very long one for a multipara; the delay being attributable to the great distension preventing due energy of contraction. On the membranes being artificially ruptured, about four litres of the liquor amnii were discharged, and the head passed down in the normal manner, followed by the shoulders, to the outlet of the pelvis; but here neither strong pains nor the woman's efforts sufficed for the expulsion of the child. On examination it was found that the delay arose from the vagina being entirely occupied and enormously distended by the abdomen of the child. After repeated and violent traction the living child was at last extracted, a partial rupture of the perineum taking place during the procedure. The abdomen of the child was of an extraordinary size, and measured 48 centimetres in circumference, being about 14 centimetres more than usual. The child was premature, but well developed, the immense distension of the abdomen being the only remarkable feature. At the umbilicus was an aperture 3 centimetres in diameter, through which two portions of intestine issued from the abdomen. The umbilical vein separated from the arteries, and the peristaltic contractions of the intestine, were plainly visible. A few minutes after its birth, the child commenced passing water from an opening beneath the urethra. The urine was not discharged in a full stream, but continued to trickle away during six hours, the distension of the abdomen diminishing at the same time; so that seven hours after delivery the bladder was completely empty, and the walls of the abdomen were relaxed and wrinkled. The child, although premature, seemed viable, and ten hours after its birth took the breast. It refused it on the second day, and died after forty-six hours' life. At the autopsy, great hypertrophy of the bladder with dilatation of the ureters was found. The urethra was so narrow that it could be laid open only with the smallest scissors, the canal terminating in the aperture beneath the glans penis. —*Med. Times and Gazette*, Nov. 22, 1879.

On Utero-ovarian Cœsarean Amputation.

Dr. MANGIAGALLI performed (*Annali di Obstetricia Ginecologie e Peditua*, Sept. 1879) the Cæsarean section, after Porro's method, on Erminia Corti, aged 24 years. The pubic bone was rostrated, and the promontory of the sacrum projected forwards into the pelvic cavity. There was scoliosis of the spine. The operation was performed a few hours after the waters broke. Listerian precautions were adopted. The pedicle was secured by Cintrat's constrictor. The operation lasted twenty-eight minutes. The amputated uterus weighed 800 grammes. The child was a healthy live male, weighing 2600 grammes, and measuring 48 centimètres. The mother recovered without any complications. Speaking in reference to the antiseptic mode of operating, Dr. Mangiagalli says: "It seems to me, that to Lister more than to any other surgeon of our age, are due the splendid successes which have been obtained in surgery, and that to no one is the motto more applicable: *Si monumentum requeris, circumspice.*"—*Lond. Med. Record*, Nov. 15, 1879.

Successful Case of Gastrotomy in Extra-Uterine Pregnancy.

Mr. LAWSON TAIT, at a late meeting of the Royal Medical and Chirurgical Society (*Lancet*, Nov. 15, 1879), reported this case, which was intended particularly to emphasize the propriety of operating by median abdominal section, and the necessity of leaving the placenta untouched, both lessons having been taught also in a third case previously referred to, in which the section was vaginal, and the placenta had been removed, which facts had undoubtedly been the cause of a fatal issue.

The patient in this case was a worn-down anæmic married woman, aged 30, seen for the first time on March 1st last. Married three years. She had no children, and her menstrual periods had been perfectly regular till September, 1878, when they ceased, the abdomen enlarged, and she thought herself pregnant. There was a large tumour reaching above the umbilicus, fixed in the pelvis, and of uniform solidity. The uterus was of normal size, bent backwards, and the tumour was adherent to the anterior wall, and slightly movable. It was diagnosed as hæmatocele. The tumour subsequently increased to double its original size, due apparently to the sudden formation of a cyst on its upper surface, in which some solid fluctuation was perceptible.

An incision was made into the abdomen, with antiseptic precautions, on April 30th, and a cyst full of fresh blood-clot opened; this was explored, but nothing throwing light on the case found, and the wound was closed. She rallied completely from the operation, but the pain was still intense, and the opiates were increased. On May 2d red serous fluid began to ooze from the wound, and it was clear that the cyst cavity was suppurating. On the 6th and 7th several large clots came from the wound, and the cavity was cautiously syringed out with an antiseptic solution of phenol twice daily. On May 16th a piece of bone was removed, which proved to be a fœtal skull-bone of the third or fourth month, and an entire fœtus was drawn out through a hole in the original tumour which led into the cyst previously opened. The fœtus, which was not more than three months old, was macerated and rotten. On the 17th eight or nine inches of the umbilical cord came away. On the 18th the patient was anæmic and exhausted, and for the next eight days extremely ill, but began to rally on the 26th, and on the 29th a large piece of placenta was extruded. The discharge then ceased, she began to take her food well, and the wound became healthy, and on June 10th had rapidly contracted.

The diagnosis was approximately correct in so far that the lesion was one of the forms of hæmatocele, and the abdominal section was accidentally the means of saving the patient. The author made it a rule to open the abdomen in all doubtful cases—as to the nature of the tumour—where there seemed a possibility of benefit from operative proceedings, and in between fifty and sixty cases he, as in the one narrated, had had no reason to regret the proceeding. A temperature chart was attached to the paper.

Mr. DORAN drew attention to the significance of symptoms of repeated attacks of pelvic hæmatocele as pointing to extra-uterine fœtation. About eighteen months ago a lady, the mother of two or three children, applied to Dr. Connolly, of Wood-green, with severe pain in the right iliac fossa. Dr. Connolly suspected extra-uterine gestation, and six months later, on a recurrence of the symptoms, Mr. Spencer Wells was consulted. The diagnosis lay between extra-uterine fœtation and pelvic hæmatocele, and an exploratory operation was considered, but not done, and six weeks afterwards the patient died suddenly in a third attack of hæmatocele. Mr. Doran made an examination, and found a recent extravasation of blood in Douglas's pouch; beneath that a layer of partially decolorized clot, and beneath that again another layer of perfectly decolorized fibrin overlying the peritoneum, thus denoting the attacks of hæmatocele. The case was strikingly analogous to Mr. Tait's, and in view of the great mortality following an extra-uterine gestation he would suggest the propriety of exploration (under antiseptics) in cases of recurrent pelvic hæmatocele. A fœtus of about the sixth week was found in the Fallopian tube, and he showed the specimen at the last session of the Obstetrical Society. Mr. Doran said that since antiseptic treatment had come into vogue in ovariotomies he had been struck with the clean condition of the peritoneum in fatal cases, and believed that the causes of mortality after this operation were independent of septic conditions.

Mr. KNOWSLEY THORNTON related a case of supposed ovarian tumour, which turned out to be an extra-uterine gestation. The patient was extremely emaciated, and presented a large sloughy tumour in the abdomen, with a hard mass in Douglas's pouch. He thought the case one of ovarian disease, with much matting of intestines. Her condition precluded exploration, and in a few days after admission she died with symptoms resembling those of perforation of intestine. The post-mortem showed, however, an extra-uterine fœtation. In this case also there had been repeated attacks of hæmatocele, the evidences of which were found after death, which was directly due to hemorrhage. No doubt the proper course in that case would have been an early exploratory incision.

Mr. SPENCER WELLS said that in Dr. Connolly's case the question of exploratory incision was entertained, but it was not done on account of the resistance of the patient's relatives. Since then he had seen a similar case with Dr. Coates, of Salisbury. The case was marked by the same recurrence of signs of pelvic hæmatocele, and again exploration was advised, but negatived in deference to the friends' wishes. He doubted whether in the present state of knowledge a surgeon would be right in positively urging such an operation, although the protection afforded by antiseptics would strengthen him in making the request. Mr. Tait had asked for the result of his experience of ovariotomy before and after the adoption of antiseptics. Since he had fully adopted them he had eighty-one cases, with six deaths; whereas in the series of cases immediately preceding its adoption he had had a mortality of about 10 per cent. (seven deaths in seventy-four cases). He did not think so marked an advance could be simply attributed to increased experience and care, for there had been a steady diminution in mortality year by year; before antiseptics it had not been so marked as this. As soon as he had completed a hundred cases on the antiseptic method he would compare the results with the hundred before it was adopted. So far he believed that antiseptics were a great gain, and that he could more willingly urge patients to submit to the operation in view of the security they gave.

Dr. MATTHEWS DUNCAN, since he came to London, had had three cases of extra-uterine gestation. In two the diagnosis was certain; the fœtal heart was audible, and in both the fœtus died before it had reached the term of viability, so that he did not consider that operative interference was justified. Both the patients were now well. The third patient was now under his care at St. Bartholomew's Hospital. She had had an attack of hæmatocele which burst into the rectum; but she was apparently improving, and he saw no reason to interfere in any way whatever.

Mr. RIVINGTON said that in the *Medico-Chirurgical Transactions* for 1860 (vol. xliv.), the late Mr. John Adams had recorded an instance of successful removal of a fœtus in a case of extra-uterine gestation, where the placenta was left behind, a procedure to which Mr. Adams attributed the success of the case. The same author also mentions a case where the violent removal of the placenta was followed by fatal results.

Mr. **Lawson Tait** said that the peritoneum, which formed the roof of the cyst, was not opened. The rule that the placenta should not be removed had been laid down by the late M. Kœberlé. He thought that Dr. Duncan's patients were still in great risk, the condition still remaining, for cases of spontaneous recovery by discharge of fœtal remains per rectum were very few. He had only known one such case, whereas he was aware of ten or eleven fatal cases. He would say that as a rule operative interference should be had recourse to as soon as the diagnosis of extra-uterine pregnancy had been made, and if the fœtus were living it would not be wise to wait until it had reached the age of viability.

[For a report of a very interesting case of extra-uterine fœtation in which laparotomy was successfully performed, with remarks on the importance of operating early, see the *American Journal of the Medical Sciences*, October, 1878, p. 321.]

On Intra-uterine Therapeutics in the Puerperal State.

Adopting the view that the principles governing the treatment of wounds can alone give an effective prophylaxis against puerperal fever, Prof. **Grüenwaldt** recommends (*Petersburg Med. Wochenschrift*) intra-uterine injection. The latter has not been generally employed, chiefly because the injections sometimes induce unfavourable results. The parametritis and peritonitis observed after the injections, however, are in the rarest cases the result of the direct penetration of the injected fluid into the abdominal cavity, and this only in morbid dilatation of the tubes. The injection rather penetrates through the open lymphatics of the puerperal uterus to the peritoneum, and induces, partly chemically, partly by the pressure of penetration, the before-mentioned inflammatory reaction. By injection, the thromboses in the terminations of the vessels become relaxed and move on as embola; then follows ague, or hemorrhage takes place after the opening of the vascular lumina, which they had closed. If the injected fluid penetrate directly into the open vessels, unconsciousness, collapse, giddiness and fainting fits take place. The author does not agree with the view of Lazarewitsch, that the fundus uteri is very sensitive when brought into direct contact with an injection, but he seeks, in such cases, for the cause of these critical symptoms in the difficult discharge of the injected fluid. As the danger is very great if the air obtain access to the bloodvessels, the irrigator alone must be employed, and all syringes, etc., are to be rejected. The quantity of the fluid should amount to from one-half to one litre; the double-barrelled probes are the best, but they must not consist of soft material. In introducing the probes, great care must be taken to avoid laceration, as the wounds may become foci of renewed infection. There are many cases in which one injection is sufficient, especially in those in which remains of eggs have been left behind, but in endometritis and diphtheritis, repeated and long-continued irrigation are necessary daily. In such cases, Schücking's permanent irrigation and the uterus-drainage are to be recommended (Langenbuch, Schede, Spiegelberg). Immediately after accouchement, an injection, washing the whole genital canal, should be resorted to, and this is especially necessary after difficult confinements in which operations have been performed. This irrigation, however, is to be repeated during the course of the puerperal fever only if an increase of temperature or abnormal condition of the lochia indicate illness. The employment of carbolic acid is best. The author cannot agree with Fritsch as to the danger of injecting liquor ferri sesquichloridi. In removing ichoric remains of ova by the curette or sharp spoon, the danger of inoculation by simultaneous disinfecting irrigation is diminished. In subinvolution of the uterus, the application of medicaments by means of an aluminium probe, enveloped in wadding, is much to be recommended.—*London Med. Record*, Nov. 15, 1879.

Spontaneous Expulsion of a Fibro-myoma.

At a meeting of the Obstetric and Gynæcological Society of Berlin (*Berliner Klinische Wochenschrift*, October 6th), Dr. EGGEL related the following case, which had occurred in his practice: A woman, aged 32, who had been married four and a half years, but was sterile, and had for nine months suffered from profuse metrorrhagia, consulted him in October, 1878, on account of her anæmic condition. Extending about two and a half or three inches above the symphysis pubis, was a tumour belonging to the left half of the anterior wall of the uterus. The sound entered about three inches, somewhat to the right. She was ordered ergotin, liquor ferri, and, when the bleeding ceased, salt baths. On March 6th the patient again presented herself, and reported that the menses had appeared very profusely on February 20th; and that consequently, by the advice of a female friend, she had on the fifth or sixth day used a hot vaginal injection—first, it was stated, at a temperature of 122° Fahr., and then, as this could not be borne, at 104° Fahr. This was followed by continuous pain in the hypogastrium. On March 16th prolonged dancing was followed by a renewed loss of blood, and the patient observed that a foreign body was escaping from the vagina. In attempting to remove it, the patient tore away several firm flesh-like pieces varying in size from a plum-stone to a little finger. The mass of the tumour was of the same structure. Dr. Eggel, on March 18th, ascertained it to be a tough, irregularly lobed mass, having a multipartite or a folded pedicle, and firmly embraced by the external os uteri. There was abundant discharge of a sero-sanguinolent fluid, smelling like glue. The temperature was slightly raised; the hypogastrium was tender. Ergot, cold bandages, and carbolic acid injections were ordered. During the following days small portions of the tumour were discharged with much pain; on the morning of the fifth day the whole mass was thrown off. The patient recovered. Dr. Eggel believed that the hot injections had produced inflammation and softening of the mucous membrane covering the myoma. Dr. Ruge had seen a myoma of the size of an apple thrown off spontaneously on the third day of childbed.—*British Med. Journal*, Nov. 1, 1879.

On Castration of Women.

Dr. A. SCHUCKING (*Centralblatt für Gynäkologie*, Sept. 27, 1879) performed Battey's operation on a woman aged 38 years, the mother of six children. The grounds for the operation were marked hysteria, epileptic attacks, metrorrhagia, with painful menstruation, and trismus. Bromide of potassium, iron, massage, baths, valerian, morphia, chloral-hydrate, rubbing in of tincture of iodine over the region of the ovaries, and the administration of Fowler's solution, were ineffectual. It was therefore resolved to operate. The ovaries were removed through an abdominal incision, and the pedicles secured with catgut. The Listerian method was employed in all its details. The spray was a 2½ per cent. solution of carbolic acid. Hardly a drop of pus was present in the wound on the tenth day after the operation. The recovery was rapid, and the result of the operation most gratifying. The abdominal pain, the uterine bleeding, the cataleptic attacks, the trismus, and other symptoms have vanished. The patient now feels well and healthy. Microscopic examination of the ovaries gave no positive results, scarcely any discernible pathological changes having taken place. —*London Med. Record*, Nov. 15, 1879.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

Fungus Poisoning and its Treatment.

It is a noteworthy fact, that, although several cases of fungus poisoning have been reported during the last few weeks both in London and in Paris, in no single instance is it stated that atropia was employed as an antidote. This is the more remarkable, as probably the most perfect example of physiological antagonism with which we are acquainted, is that afforded by the power of atropia to counteract the active principle of mushrooms. Uscarine was first extracted by Professor Schmiedeberg of Strasburg, and its properties and mode of action have been amply investigated both by its discoverer and by such able workers as Koppe, Prevost, Alizon, Lauder Brunton, Schiff, and Ringer. When given internally in medicinal doses it produces sweating, salivation, lachrymation, purging, and contraction of the pupil, whilst atropia, as is well known, dries the skin and mouth and dilates the pupil. The antagonism existing between these two great principles can be shown by a very simple physiological experiment. If the minutest trace of muscarine be applied to a frog's heart, its contractions immediately become slower and more feeble, and after a few minutes are completely arrested. If now a drop of atropia be applied to the motionless heart, its action is at once completely restored, and the pulsations continue as if nothing had happened. It is found that in this way a heart may be revived after being motionless for nearly four hours. Brunton has shown that in mammals atropia at once counteracts the effect of muscarine on the heart just as it does in frogs. In a case of mushroom poisoning vomiting should be promoted by tickling the fauces, or other means, and a minim of liquor atropiæ should be injected hypodermically and repeated at intervals if necessary until the urgent symptoms have subsided. Although atropia is the best, it is probably not the only antidote to muscarine. Ringer and Murrell have shown, in recent papers in the *Journal of Physiology*, that pituri, duboisia, and pilocarpine will all antagonize the action of muscarine on the heart. The antagonism of pilocarpine for extract of aminita muscaria is less marked than that of atropia or duboisia. Thus atropia and duboisia will increase the pulsation of a heart stopped by muscarine thirty beats in a minute, whilst pilocarpine augments the beat only about eighteen in the minute; nevertheless it is found that the increase in the strength is as great after the application of pilocarpine as of atropia or duboisia. It is a remarkable fact that pilocarpine, a sweater and salivator, which slows and weakens or arrests the frog's heart, should antagonize muscarine, which is also a sweater and a salivator, and stops the heart.—*Lancet*, Nov. 29, 1879.

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CONTENTS

OF

THE AMERICAN JOURNAL

OF

THE MEDICAL SCIENCES.

NO. CLVIII. NEW SERIES.

APRIL, 1880.

ORIGINAL COMMUNICATIONS.

MEMOIRS AND CASES.

ART. PAGE

I. "Through Drainage" in the Treatment of Open Wounds. By Thomas M. Markoe, M.D., Professor of the Principles of Surgery in the College of Physicians and Surgeons in New York City, and one of the Attending Surgeons to the New York Hospital. 305

II. The Porro Modification of the Cæsarean Operation, in Continental Europe; Chronologically and Analytically Examined; showing the success of the new method; its advance from Italy to other countries; and its diminishing fatality under a better knowledge of the requisites for securing success; the whole statement being prepared with a view to enable our Obstetrical Surgeons to decide whether we should introduce this method into the United States. By Robert P. Harris, A.M., M.D., Member and Ex-President of the Philadelphia Obstetrical Society, etc. . 335

III. On Congenital Atresia of the Pulmonary Artery. By Albert F. Stifel, M.D., of Wheeling, West Virginia. 363

IV. Rapid Lithotrity with Evacuation. By E. L. Keyes, A.M., M.D., Adjunct to the Chair of Surgery, Bellevue Hospital Medical College, Surgeon to Bellevue and Charity Hospitals, New York. 369

V. Report of a Case where Mother and Child died during Labour, from difficulties attributed to Shortness of the Pedicle, secured by a clamp, in Ovariotomy. By Walter F. Atlee, M.D., of Philadelphia. . . . 394

VI. Notes of Three Cases of Severe Injury to the Eye treated almost exclusively by Rest. By G. W. Murdock, M.D., Surgeon to West Point Foundry. 396

VII. Three Cases of Syphilitic Muscular Contraction. By Arthur Van Harlingen, M.D., Chief of the Skin Clinic, Hospital of the University of Pennsylvania. 399

VIII. Removal of a Large, Interstitial Uterine Fibroid. By T. Gaillard Thomas, M.D., Professor of Diseases of Women in the College of Physicians and Surgeons. New York. 405

IX. On the Diagnosis of Fractures and Dislocations, with a view to the establishment of Pathognomonic Principles. By L. A. Dugas, M.D., LL.D., Professor of Surgery in the Medical College of Georgia. . . 408

X. On the Relative Value of the Sulphates of Atropia and of Duboisia in Ophthalmic Practice. By S. D. Risley, M.D., Lecturer on Ophthalmoscopy in the University of Pennsylvania; Ophthalmic and Aural Surgeon to the Episcopal Hospital, Philadelphia. 410

XI. Case of Uterine Fibroid Treated by Ergotine Injections, and finally Removed by means of Thomas's Scoop. By Mary Putnam Jacobi, M.D., of New York. 422

ART. PAGE

XII. Case of Extensive Traumatic Injury of the Skull, Abscess of the Brain, Right Hemiplegia, Aphasia; Recovery. By A. Liebig Elcan, M.D., of Covington, Tenn. 426

XIII. Metastatic Tenonitis in Diphtheria. By Albert G. Heyl, M.D., Ophthalmic Surgeon to the Episcopal Hospital, Philadelphia. . . 429

XIV. Gunshot Wound; Ball entering left side of the Neck, passing through Spinal Column at Seventh Cervical and First Dorsal Vertebræ and lodging in Right Trapezius Muscle. Peculiar feature of the Lungs found on post-mortem. By Junius L. Powell, M.D., Assist. Surgeon U. S. Army, Post Surgeon to Fort Griffin, Texas. 434

XV. Absorption of a Large Fibroid Tumour of the Uterus under the Use of Ergot. By Clinton Cushing, M.D., of Oakland, California. . . . 436

XVI. Central Myxo-Sarcoma of the Right Superior Maxilla; Removal of Entire Maxilla and Portion of Malar Bone. By John L. Neilson, M.D., Passed Assistant Surgeon, U. S. Navy. 437

XVII. Extra-Uterine Pregnancy; Operation; Recovery. By George P. Young, M.D., of Allensville, Todd County, Kentucky. 442

XVIII. A Case of Epileptiform Convulsion cured by a Simple Detachment of a Glandulo-Preputial Adhesion. By D. B. Simmons, M.D., Surgeon to Ken Hospital, Yokohama, Japan. 444

XIX. Ten Consecutive Breech Presentations in the Same Woman. By Randolph Winslow, A.M., M.D., Assistant Demonstrator of Anatomy in the University of Maryland. 444

XX. Impacted Calculus in a Child Seven Months Old; Phimosis and Adherent Prepuce. By G. F. Blawelt, M.D., of Nyack, New York. . . 446

REVIEWS.

XXI. Clinical Study of Yellow Fever.

1. De la Fièvre Jaune à la Martinique, Antilles Françaises. Étude faite dans les Hôpitaux Militaires de la Colonie. Par L. J. B. Bérenger Féraud, Médecin en Chef de la Marine, Membre Correspondent de l'Académie de Médecine, Laureat de l'Institut de France (Académie des Sciences), etc. Paris: V. Adrien Delahaye et Cie., 1879.
2. Reports to the St. Louis Medical Society on Yellow Fever. By W. Hutson Ford, A.M., M.D., formerly Professor of Physiology in the New Orleans School of Medicine, and in the Charity Hospital Medical College of New Orleans. St. Louis: Geo. O. Rumbold & Co., 1879.
3. Proceedings of the Louisiana State Medical Association, held in New Orleans, April, 1879. Comparative Pathology of Malarial and Yellow Fevers. By Joseph Jones, M.D., Professor of Chemistry and Clinical Medicine, Medical Department University of Louisiana; Visiting Physician to Charity Hospital, New Orleans.
4. Third Report of the Board of Health to the Honourable City Council of Nashville for the two years ending December 31, 1878.
5. Twelfth Annual Report of the Health Department to the Honourable Common Council of Cincinnati for the year ending December 31, 1878.
6. A History of the Yellow Fever Epidemic of 1878 in Memphis, Tenn. By J. M. Keating.
7. Annual Report of the Board of Health of the State of Louisiana to the General Assembly for the year 1878.
8. First Annual Report of the State Board of Health of Kentucky, 1879.
9. Yellow Fever and Malarial Diseases, embracing a History of the Epidemics of Yellow Fever in Texas; new views on its diagnosis, treatment, propagation, and control; Description of Dengue, Malarial Fevers, Jaundice, the Spleen and its diseases, and Diarrhœa Hemorrhagica; with practical remarks on their successful treatment, etc. By Greenville Dowell, M.D., etc., 1876. 447

ART. PAGE
XXII. Recent Progress in Nervous Diseases.
A Manual of the Nervous Diseases of Man. By Moritz Heinrich Romberg, M.D., Professor of Medicine at the University of Berlin, etc. Translated and edited by Edward H. Sieveking, M.D., F.R.C.P. 2 vols. 8vo. pp. xvi., 316, xviii., 450. London, 1853.
Klinik der Nervenkrankheiten, etc., Von M. Rosenthal. 8vo. pp. 800. Stuttgart, 1875.
A Clinical Treatise on the Diseases of the Nervous System. By M. Rosenthal, Prof. of Diseases of Nervous System at Vienna. With a Preface, by M. Charcot. Translated by L. Putzel, M.D. 2 vols. 8vo. pp. xi., 278, vi., 284. New York: Wm. Wood & Co., 1879. . 457
XXIII. St. Thomas's Hospital Reports. New series. Edited by Dr. Robert Cory and Mr. Francis Mason. Vol. IX. 8vo. pp. xiv., 357. London: J. & A. Churchill, 1879. 469
XXIV. A Manual of Pathological Histology. By V. Cornil, Assistant Professor in the Faculty of Medicine of Paris, and L. Ranvier, Professor in the College of France. Translated, with notes and additions, by E. O. Shakespeare, A.M., M.D., Lecturer on Refractive Ophthalmic Surgery in the University of Pennsylvania, and J. Henry C. Simes, M.D., Demonstrator of Pathological Histology, and Lecturer on Histology in the University of Pennsylvania. 8vo. pp. 784. Philadelphia: Henry C. Lea, 1880. 475
XXV. Paracentesis Pericardii.
1. Paracentesis of the Pericardium; a consideration of the Surgical Treatment of Pericardial Effusions. By John B. Roberts, A.M., M.D., Lecturer on Anatomy in the Philadelphia School of Anatomy, etc. 12mo. pp. 100. Philadelphia: J. B. Lippincott & Co., 1880.
2. Ein Fall von Paracentesis Pericardii. Aus der medicinischen Klinik zu Freiburgi, B. Freiburger Dissertation. Von Dr. C. Hindenlang, Ersten Assistenzarzt der Klinik. Deutches Archiv für klinische Medicin, 1879. Bd. xxiv. Heft. 445, pp. 452–482.
A Case of Paracentesis of the Pericardium; from the Medical Clinic of Freiburg. By Dr. C. Hindenlang. 480
XXVI. Report on the Revision of the U. S. Pharmacopœia, preliminary to the Convention of 1880. Being a Rough Draft of the General Principles, Titles, and Working Formulæ proposed for the next Pharmacopœia. Prepared and compiled by Charles Rice, Chairman of the Committee on the Revision of the U. S. Pharmacopœia of the American Pharmaceutical Association. 8vo. pp. xviii., 202. New York, 1880. 484
XXVII. St. George's Hospital Reports. Edited by W. H. Dickinson, M.D., F.R.C.P., and Thomas Pickering Pick, F.R.C.S. Vol. IX., 1877–8. 8vo. pp. xiv., 815. London: J. & A. Churchill, 1879. . . 489
XXVIII. The Student's Guide to Diseases of the Eye. By Edward Nettleship, F.R.C.S., Ophthalmic Surgeon to St. Thomas's Hospital. 12mo. pp. 369. Philadelphia: H. C. Lea, 1880. 497
XXIX. Pseudo-Hypertrophic Muscular Paralysis. By W. R. Gowers, M.D., M.R.C.P., Assistant Professor of Clinical Medicine in University College, etc. 8vo. pp. vii., 66. London: J. & A. Churchill, 1879. . 498
XXX. Meine Erlebnisse im serbisch-türkischen Kriege von 1876. Eine kriegschirurgische Skizze von Dr. F. Lange. Mit einem Vorworte von Dr. F. Esmarch. Professor der Chirurgie in Kiel. 8vo. ss. 156. Hannover: Carl Rümpler, 1880.
My Experience in the Turko-Servian War of 1876. A sketch of military surgery. By Dr. F. Lange, of New York, formerly assistant in the surgical clinic at the University of Kiel. With a Preface by Prof. F. Esmarch, of Kiel. 8vo. pp. 156. 500
XXXI. Transactions of the American Ophthalmological Society. Fifteenth Annual Meeting. 8vo. pp. 105. New York, 1879. . . . 501
XXXII. Die Lungensyphilis und ihr Verhältniss zur Lungenschwindsucht. Von Dr. Joh. Schnitzler, K. K. A. O., Professor an der Wiener Universität. 8vo. pp. 60. Wien: Urban & Schwarzenberg, 1880.

ART. PAGE

Pulmonary Syphilis, and its Relation to Pulmonary Consumption. By Dr. John Schnitzler, Professor in the University of Vienna. . . 504

XXXIII. Clinical Lectures on the Diseases of Women, delivered in Saint Bartholomew's Hospital. By J. Matthews Duncan, M.D., LL.D., F.R.S.E., etc. 8vo. pp. 175. Philadelphia: Henry C. Lea, 1880. . 505

XXXIV. Physiology and Histology of the Cerebral Convolutions. Also, Poisons of the Intellect. By Charles Richet, A.M., M.D., Ph.D., former Interne of the Hospital of Paris. Translated by Edward P. Fowler, M.D. 8vo. pp. xv., 170. New York: Wm. Wood & Co., 1879. . . . 506

XXXV. A Manual of the Practice of Surgery. By W. Fairlie Clarke, M.D. (Oxon.), F.R.C.S., Late Assistant Surgeon to Charing Cross Hospital. Third Edition. 18mo. pp. xi., 443. New York: G. P. Putnam's Sons, 1880.

The same, Revised and Edited, with additions, by an American Surgeon. 8vo. pp. xi., 316. New York: William Wood & Co., 1879. . . 508

XXXVI. Pharmacographia. A History of the Principal Drugs of Vegetable Origin met with in Great Britain and British India. By Frederick A. Flückiger, Phil. Dr., Professor in the University of Strassburg, and Daniel Hanbury, F.R.S , Fell. of Linnean and Chemical Soc. of London. Second ed. 8vo. pp. xx., 803. London: Macmillan & Co., 1879. . 510

XXXVII. Transactions of the American Otological Society. 12th Annual Meeting, 1879. 8vo. pp. 75. Boston: A. Williams & Co., 1879. . 511

XXXVIII. A System of Medicine. Edited by J. Russell Reynolds, M.D., F.R.S., Professor of Medicine in Univ. Coll. London, etc. With numerous additions and illustrations. By Henry Hartshorne, A.M., M.D., lately Professor of Hygiene in the University of Pennsylvania, etc. etc. In three volumes. Vol. II. Diseases of the Respiratory and Circulatory System. 8vo. pp. 935. Philadelphia: Henry C. Lea, 1880. 513

XXXIX. First Lines of Therapeutics, as Based on the Modes and the Processes of Healing, as occurring spontaneously in Disease; and on the Modes and Processes of Dying, as resulting naturally from Disease. In a Series of Lectures. By Alexander Harvey, M.A., M.D. (Edin.), Emeritus Professor of Materia Medica in the University of Aberdeen, etc. 12mo. pp. xvi., 278. New York: D. Appleton & Co., 1879. 514

XL. Experimental Researches in the Regional Temperature of the Head, under Conditions of Rest, Intellectual Activity, and Emotion. By J. S. Lombard, M.D., formerly Assistant Professor of Physiology in Harvard University, U. S. 8vo. pp. viii., 211. London: H. K. Lewis, 1879. . 514

XLI. Health Reports.

1. First Annual Report of the State Board of Health of the State of Rhode Island for 1878. Pp. 200. Providence, 1879.
2. First Annual Report of the State Board of Health of Kentucky, 1878. Pp. cxxiv., 84. Frankfort, 1879.
3. Third Report of the Board of Health of the City of Nashville for 1877 and 1878. Pp. 384. Nashville, 1879.
4. Annual Report of the Board of Health of the State of Louisiana for the year 1878. Pp. 192. New Orleans, 1879.
5. Seventh Annual Report of the State Board of Health of Minnesota, January, 1879. Pp. 133. Minneapolis.
6. Fifth Biennial Report of the State Board of Health of California for the years ending 1878 and 1879. Pp. 115. Sacramento, 1879. . 516

XLII. A Treatise on the Science and Practice of Midwifery. By W. S. Playfair, M.D., F.R.C.P., Physician Accoucheur to H. I. and R. H. the Duchess of Edinburgh, etc. etc. Third American edition, revised and corrected by the Author. With Notes and Additions by Robert P. Harris, M.D. 8vo. pp. 655. Philadelphia: Henry C. Lea, 1880. . . . 521

XLIII. Sore Throat: its Nature, Varieties, and Treatment; including the connection between Affections of the Throat and other Diseases. By Prosser James, M D., Lecturer on Materia Medica and Therapeutics at

ART. PAGE

the London Hospital. Fourth edition. 12mo. pp. 318. Philadelphia: Lindsay & Blakiston, 1880. 521

XLIV. The Spectroscope in Medicine. By Charles A. MacMunn, A.B., M.D. 8vo. pp. xiv., 198. Philadelphia: Lindsay & Blakiston, 1880. . 524

XLV. Minor Gynecological Operations and Appliances for the Use of Students. By J. Halliday Croom, M.B., M.R.C.P.E., Lecturer on Midwifery and Diseases of Women at the School of Medicine, etc. 12mo. pp. 106. Edinburgh: E. & S. Livingstone, 1879. 526

XLVI. Cancer of the Rectum, its Pathology, Diagnosis, and Treatment. By W. Harrison Cripps, F.R.C.S., Surgeon to the Great Northern Hospital, etc. 12mo. pp. viii., 191. London: J. & A. Churchill, 1880. . 526

XLVII. Outlines of the Practice of Medicine, with Special Reference to the Prognosis and Treatment of Disease. By Samuel Fenwick, M.D., Lecturer on Medicine at London Hosp., etc. 8vo. pp. xvi., 387. Philadelphia: Lindsay & Blakiston, 1880. 529

XLVIII. A Dictionary of the German Terms used in Medicine. By Geo. R. Cutter, M.D., Surgeon of the New York Eye and Ear Infirmary. 12mo. pp. 304. New York: G. P. Putnam's Sons, 1879. . . . 529

XLIX. A Manual of Auscultation and Percussion; embracing the Physical Diagnosis of the Diseases of the Lungs and Heart, and of Thoracic Aneurism. By Austin Flint, M.D., Professor of the Principles and Practice of Medicine in Bellevue Hosp. Med. College, etc. Second edition, revised. 8vo. pp. viii., 240. Philadelphia: Henry C. Lea, 1880. . . . 530

L. A Text-Book of Physiology. By J. Fulton, M.D., M.R.C.S. Eng.; Professor of Physiology in Trinity Medical College, Toronto, etc. 8vo. pp. x., 416. Philadelphia: Lindsay & Blakiston, 1879. . . . 530

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES IN THE MEDICAL SCIENCES.

Anatomy and Physiology.

PAGE

Physiology of Reading. By M. Javal. 531

Materia Medica and Therapeutics.

PAGE

Quebracho, a Palliative Remedy in Dyspnœa. By Dr. Penzoldt . 531

On the Relative Paralyzing Action of Atropia and Pilocarpine on the Heart. By Dr. Sidney Ringer and Mr. E. A. Morshead. . . 532

Effects of Long-continued Use of Chloral. By Dr. Farquharson . 533

Duboisia and its Therapeutic Use. By M. Fauqué. 534

Intravenous Injections of Milk. By Dr. Demetre-Culcer. . . 535

Medicine.

The Treatment of Leucocythæmia. By Dr. Alfred Carpenter. . . 535

Aconitia in Neuralgia. By Dr. Oulmont. 536

On a Group of Symptoms probably arising from Neurosis of the Vagus Nerve. By Rosenbach. . 537

On Reflex Paralysis in Ulceration of the Large Intestine. By Dr. A. Hoffmann. 538

Phlyctenular Inflammation of the Vocal Cords. By Dr. Rudolf Meyer. 538

On Diaphragmatic Pleurisy. By M. Hermil. 539

PAGE
Pleuritic Effusions and Phthisis Pulmonum. By Prof. Gerhardt. 539
Night-sweats in Phthisis. By Dr. Köhnhorn. 541
Gonorrhœal Endocarditis. By Baudin. 541
On the Use of Hydrate of Chloral in Acute Gastro-enteritis in Children. By Prof. Adolf Kjellberg. 542
Amyloid Degeneration of the Viscera, developed within two Months. By Prof. M. V. Odenius. 543
Experimental Study on the Treatment of Hepatic Colic. By M. Laborde. 543
Cysticercus Cellulosæ Affecting the Skin. By Edward Schiff. . 544
Observations on Alopecia Areata. By Prof. H. Eichhorst. . . 544
Treatment of Herpes Zoster. By M. Vidal. 545

SURGERY.

Operative Treatment of Nasal Polypi. By Hartmann. . . 546
Extirpation of the Larynx and Anterior Wall of the Œsophagus. By Dr. F. Lange. . . . 546
On Extirpation of the Pharynx. By Prof. von Langenbeck. . 548
On Resection of the Ribs in Chronic Empyema. By Dr. J. A. Estlander. 550
A Case of Abscess of the Kidney, in which Nephrotomy, with Subsequent Free Drainage, was attended with Satisfactory Results. By Mr. Chauncy Puzey. . . 551
Nephrectomy. By Prof. Czerny. 555
Injections of Ergotin in Prolapsus of Rectum and Hæmorrhoids. By Dr. Ferrand. . . . 557
Articular Tuberculosis. By Brissaud. 557
Malignant Osteomyelitis and Sarcomatous Diseases of the Bones in Pernicious Anæmia. By Grawitz. 557
Case of Non-Syphilitic Diffuse Periostosis. By Dr. Le Dentu. . 558
Aneurism of the Subclavian Artery treated by Amputation of the Shoulder-joint, and the introduction of Needles into the Sac. By Mr. Christopher Heath. . . 559
Aneurism of the Left Hypogastric Artery. By Dr. Binswanger. . 561
Treatment of Popliteal Aneurism by Esmarch's Bandage. By Mr. Christopher Heath. . . . 562
Nerve-Stretching for Neuralgia of the Trigeminal Nerve. By Kocher. 565

OPHTHALMOLOGY AND OTOLOGY.

New Method of Performing Sclerotomy. By Dr. George Martin. 565
Enervation of the Eyeball. By M. Warlomont. 565
Tetanus Produced by the Presence of a Foreign Body in the Conjunctival Sac. By Dr. Samelsohn. . 566
The Conjunctivitis and Otitis of Hay-fever. By Giffo. . . 566

MIDWIFERY AND GYNÆCOLOGY.

A Successful Case of Laparo-Elytrotomy. By Dr. Walter R. Gillette. 566
Pregnancy in a Uterus Bicornis mistaken for Extra-Uterine Fœtation. By Dr. William Goodell. 567
On the Employment, in certain Cases, of a Caoutchouc Thread for the Ligature of the Umbilical Cord. By Dr. P. Budin. . . 567
The Etiology of Puerperal Cystitis. By Schwarz. 568
Myxoma Enchondromatodes Arborescens Colli Uteri. By Dr. George Rein. 569

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

On Poisoning by Perchloride of Iron. By Drs. Beranger-Féraud and Porte. 569

CORRIGENDA.

Page 358, in right hand column of table, 3d line, *dele* "32 " "
" 360, second column, 1st line, *for* "April 22, 1877," *read* "April 22, 1878."

THE

AMERICAN JOURNAL

OF THE MEDICAL SCIENCES

FOR APRIL, 1880.

ARTICLE I.

"THROUGH DRAINAGE" IN THE TREATMENT OF OPEN WOUNDS.

By THOMAS M. MARKOE, M.D., Professor of the Principles of Surgery in the College of Physicians and Surgeons in New York City, and one of the Attending Surgeons to the New York Hospital.

A VERDICT, almost unanimous, has been pronounced in favour of Mr. Lister's antiseptic method of treatment of wounds. In a practical point of view it is conceded to be an advance so great and so valuable that it is not easy to find its parallel even among the amazing strides of modern surgery. This favourable verdict has not been arrived at by the overshadowing influence of a great name, nor has it grown out of the teachings of a popular school of medical thought, nor indeed is it merely the result of a general acquiescence in a fashionable theory. It is the expression of the results of a fair and honest trial of the method by men of all schools and in all parts of the civilized world; a trial which, on Mr. Lister's earliest announcement of his views, was begun by a few earnest men with many doubts and with much hesitation; but a trial in which each succeeding witness confirmed the favourable testimony of those who had spoken before him, until, at the present moment, it would hardly be extravagant to assert that there are fewer men who do not acknowledge the practical advantages of Lister's method of treating wounds, than there are who do not recognize the usefulness of splints in the treatment of fractures, or of the ligature in the arrest of hemorrhage. This unanimity, moreover, was not arrived at on the earliest experiences of the method, nor were the first trials in every case satisfactory, certainly not convincing. It has grown out of a large experience by competent men who have, after careful study, finally been convinced by what they have seen, and speak therefore of what they know. The indorsement of the leading surgeons in every capital in Europe is enough to establish a practice, of the results of which they would be accepted as competent judges.

The verdict, thus unanimous as to the practical merits of the antiseptic treatment, is by no means so unhesitating as to the various theoretical points upon which, according to Mr. Lister, the treatment is founded, and by which its success is sought to be explained. Many men in many countries have felt and do still feel much doubt about accepting all the theoretical explanations which Mr. Lister has given as the justification of his process, and some not inconsiderable names can be cited who differ from him fundamentally as to theory, and yet are perhaps among the most zealous advocates of his plan as a surgical procedure.

Mr. Lister himself is exceedingly unyielding on this point. For him the theory so perfectly explains the practice, and the practice so admirably justifies the theory, that nothing is wanting but a rigid adherence to his rules, and scrupulous care in carrying out details in their application to secure the hoped-for results; and, when these results do not quite correspond with the expectations of the surgeon, it is not the method or the theory that is at fault, but it is the careless or imperfect application which, according to the theory, cannot, if properly applied, fail to secure all that has been promised. This somewhat exacting demand should be carefully borne in mind while studying this subject, and we must remember that we are obliged to believe all that Mr. Lister believes, and to do all that he commands, or we shall fail to secure the promised blessing. This Mr. Lister does not hesitate to avow, and this absolute submission of the details of the practice to the requirements of the theory is the leading feature in all his teachings and the ready explanation of all apparent failures in the result of his practice.

We are called upon to believe, for example, that bacteria of every dangerous form are floating abundantly in every, even the purest and most wholesome, atmosphere. We are also asked to believe that these germs, if once allowed to come in contact with a wound or sore, have the power not only of causing putrefaction of the fluids, but of entering into the tissues of the affected part, and, having made a lodgment there, have the power of reproduction to such an extent that they rapidly pervade the whole exposed region, and spread their ravages to the mass of the blood, and finally, we are taught, and the lesson is insisted on with great earnestness, that this is the cause and the only cause of all the septic accidents to which the wound is liable. These three postulates are the fundamental and essential features of the whole system, and, if it can be shown that any one of them is not true, then we must not only give up the theory as untenable, but we must supply the place of the exploded doctrine by an explanation which will not only account for the acknowledged success of the practice, but which cannot in its turn be discredited or disproved.

And here it may with great propriety be asked, if the practice be so avowedly successful, and if the theory be a sufficient and not unreasonable explanation of the phenomena of its application, why raise a question about the soundness of the speculative views, the practical results being by all acknowledged to be entirely satisfactory? The reasons for thus impugning a theory which, in one sense, answers its purpose sufficiently well, are in my judgment many and good. In the first place, science should never be incumbered with false doctrines, even though these doctrines do not apparently lead to objectionable practice. In the second place, though false theory may not in the particular case involve bad practice, yet, when, believing in the false theory, we extend it to other practical applications perhaps widely different from that with which we commenced our study, it will be sure to land us upon unsound conclusions and upon unsafe practice. Once more, sound practice based upon sound theory leads to new advances and new achievements in our art. Experience, be it ever so extensive, is never and can never be fruitful if it be not founded on accurate science; and the man who piles up through years of perhaps tolerably successful practice, an experience in which the reason why he succeeded and the reason why he failed have never been clear to his own mind, finishes his professional course not a better, but often a much worse practitioner than he was when he began his blundering career. For these and other good reasons it seems to me to be a clear duty to sift thoroughly, and, if truth demands, to set aside the theoretical claims which Mr. Lister has put forward as to the foundations of his so-called antiseptic treatment of wounds.

In pursuance of this investigation then we are entitled to ask: *First.* Is there no other explanation of the ill-behaviour of wounds beside that offered by putrefaction and the absorption of putrid materials into the blood?

Secondly. Are there no agencies which modify the tendencies to ill-behaviour in wounds besides those that prevent putrefaction?

Thirdly. Are all the details insisted upon by Mr. Lister necessary to secure the favourable result?

Fourthly. Is it true that if all the precautions required are carefully and thoroughly taken we may be absolutely sure of success?

These are general questions it is true, but they cover the whole subject of theoretical and practical antiseptic surgery. If these questions must be answered as Mr. Lister would answer them, then the whole discussion is closed, without any chance of reconsideration or appeal, and, in the surgery of wounds, we must hereafter accept without hesitation or doubt all that Mr. Lister directs us to believe as well as all that he directs us to do. If, on the other hand, it should appear that any or all these questions admit of any other answer than that demanded by the septic theory, then it is competent to us to propound and maintain any other view, which to us may seem well founded, which will explain the *modus operandi* as well as account for the success of Mr. Lister's treatment. My own judgment has long been made up that the first and second of these questions admit of an affirmative answer, and that the other two should be answered in the negative. Let us consider each question in order.

First. *Is there no other explanation of the ill-behaviour of wounds besides that offered by putrefaction and the absorption of putrid materials into the blood?* The points here at issue may be somewhat narrowed by excluding at once all general or constitutional conditions. All must allow that an ill condition of the general system must modify the local actions unfavourably; while all would agree that the wounds and injuries most likely to behave well would be those occurring in a vigorous and healthy constitution. We may confine ourselves therefore, in studying this question, to the local actions set up by the traumatism, and the question might then be modified so as to read, Are there no local influences affecting the wound unfavourably besides those resulting from putrid absorption? This question is evidently a vital one, testing not merely the correctness of Mr. Lister's theories, but the extent of their application, for it must be observed that he does not claim that bacteria are sometimes, but that they are always and exclusively the agents of evil symptoms in the wound, and that upon this extent to which the theory is carried depends alone the significance of his practical precepts.

In trying to arrive at the answer to this question, let us begin with a distinct recognition of the facts with which we are to deal. The first and chief fact in the case is that in a given wound we sometimes see instead of a healthy process of repair, that inflammation is developed with its various consequences in the shape of suppuration, ulceration, and mortification. The second most important fact is that when these destructive consequences of inflammation are once established in the wound, we have the whole system in some way involved in the disturbance, and that this involvement of the general system is usually somewhat nearly proportioned to the gravity of the local mischief. These are the chief conditions of a wound to which we apply the term ill behaviour, and these are the facts in the history of wounds, in reference to which all our present speculations must be made to correspond. The advocates of the germ theory say that these germs are always floating in the atmosphere, and finding access to the wound, produce their appropriate effect, namely, putrefaction of the secretions on its surface, and that these putrid secretions poison the tissues with which they come in contact and irritate them to the degree of inflammation. Furthermore, they contend that the septic germs not only irritate the surface of the wound, but that they enter into the circulation, and that thus their poisonous influence reaches beyond the surface of the wound, affecting the neighbouring parts, and finally, by poisoning the whole mass of the blood, produce those general or constitutional commotions, which accompany the local disorder.

It is no part of my present business to attack the germ theory as such. Indeed, I may as well say at once, that I am a firm believer in many of its most important doctrines, but the affirmative answer to our question claims that it is the only cause of wound accidents, and it is this exclusive claim which I refuse to acknowledge. Let us look at the facts in the history of traumatisms a little more largely. Inflammation and its consequences are the mode in which wound accidents almost exclusively show themselves. Now, can nothing determine inflammation except the irritation of putrid secretions? As I regard the pathology of wounds and injuries, inflammation is a disturbed and morbid course of a process, which should be one of simple repair. I recognize the universal law that every tissual lesion calls forth a certain, appropriate, and generally sufficient amount of reparative action. If the reparative disposition finds favouring conditions its work is promptly, perfectly, and safely accomplished; if, however, the circumstances be not favourable, then the process of repair is apt to be complicated by the disordered actions which we call inflammation. In some of the lower classes of animals this reparative action is never other than a purely physiological process. Perfect repair and even entire reproduction of lost parts occur uncomplicated by any morbid process, and as far as we can observe, without any marked interference with the vigor or well-being of the injured individual. This perfect repair becomes less complete and more often complicated with disordered or excessive action as we rise in the animal series, till, when we arrive at man, we have repair so constantly complicated with excessive action that the very process of repair itself is by many confounded with its most deadly enemy, and we commonly speak of healing by adhesive inflammation, and by suppurative inflammation, as if such inflammation were not, in its own nature, the great obstacle to the healing process, which process can never be completed till the inflammation disappears.

Inflammation being thus prone to complicate the reparative nisus in the human body, and being the greatest if not the only factor in the evil behaviour of wounds, we may ask, Are there no conditions which produce inflammation in a recently inflicted or in a healing wound, besides those depending on septic influences? I consider that there are several, perhaps many. First, the condition in which the parts are left by the injury, contused, lacerated, irritated by foreign substances, over-heated or over-chilled, has much to do with their power of maintaining the reparative effort, certain to be called forth by the injury, and restraining it within physiological bounds. If by any of these, or similar causes, the nerve power of these injured particles has been so lowered that they cannot, in the impending reparative nisus, maintain the balance of the excited reparative forces, then physiological activity becomes pathological excess, and the reparative nisus is converted by a transition all too easy into inflammatory disintegration. Again, let us suppose that the vital depression of the injured tissues has been still greater, and that in the reaction which must follow some particles are not able to bear the sudden rush of blood upon them, which the reparative actions require, and still less able to endure the strain, which commencing inflammatory action puts upon them, will not death of particles (necrobiosis of Virchow) be sure to take place, and, occurring in the midst of tissues already struggling against the onset of disease, decide the conflict in favour of that destructive process of which it is itself the cause and the representation? Once more, given the same circumstances, and as a direct consequence of vital depression in the most severely injured parts of the tissues, we may have, as every day's experience shows us, death in mass, sloughing, mortification, greatly hindering the regular course of the reparative action, and precipitating in the adjacent parts that inflammatory excess which is so utterly inimical to healthy repair.

These wound conditions which I have presented as examples are, I contend, in their origin and essence independent of anything like septic influences. I recognize fully that these conditions, once fully produced in an injured part, are, by the very tendency they show towards inflammation, extremely prone to lead to the formation of poisonous fluids by the absorption of which the inflammation may be intensified and extended to the surrounding parts, and to the general system. But it seems to me perfectly evident that the first cause of these vicious actions is something anterior to and independent of putrefaction, something which produces a poisonous change in the fluids of the part, not something which is itself produced by the irritation of their poisonous contact; something in short which is not the result of putrefaction, and which may, and, as I believe, does constantly exist where putrefaction has never been suspected.

The above are given as examples of local conditions of injured parts capable of determining inflammatory accidents, which appear to be in their nature and origin entirely independent of poisonous absorption. Let us now look at some of the instances in which distant parts are involved in the local mischief, and inquire if all these distant disturbances must be explained by a poison circulating in the blood. And here, perhaps, I ought again to avow my full belief in the doctrine of blood infection as explaining many cases of distant disorder dependent upon local injury. The question before us is simply, Is this blood-poisoning the only explanation which science can offer, and must it be applied in all cases? Let us look, for example, at those injuries in which pain in distant and uninjured parts, either immediate and constant, or secondary and paroxysmal, constitutes the chief complaint of the sufferer. Let us examine the pathology of those cases where, instead of mere pain, sympathetic as we say of the original injury, we have those more serious commotions of the general system, neuralgias, convulsions, tetanus, and ask if none of these can be explained in any other way than by referring them to a poison circulating in the blood.

Let us still more carefully note those cases, and they are not a few, in which reparative action has seemed to be normal from the commencement to the end; when, perhaps, abundant suppuration has been of a healthy character throughout, and free from all suspicion of putrefaction; when granulation has been vigorous and sound, and has afforded from the outset the most perfect protection possible against absorption of all kinds, and yet, in which, if the reparative demand be greater than the system is able to sustain, we have progressive emaciation, loss of digestive power, increasing weakness, delirium at night, diarrhœa uncontrollable by remedies, and finally all the symptoms fully developed of true hectic. When we have carefully watched such a case reduced gradually to the lowest stage of exhaustion, and then behold the effect of a sudden removal of the offending cause, as by the amputation of the suffering member, how, as it were, the storm which was previously raging, at once becomes a calm, how delirium ceases, how healthy function returns, sleep becomes refreshing, digestion nourishing, and healthy repair of the amputation wound is promptly and cheerfully undertaken by a constitution which seemed only to ask to be relieved of a part of its burden to be able to deal vigorously and successfully with the rest; I ask, and I have no doubt as to the correct answer, Is the explanation of all these distant sympathies to be found only in the existence of a poisonous virus circulating in the blood?

May it not be that there is in the nervous system a capacity of being excited by and of suffering with a local injury which may afford a plausible and reasonable explanation of at least some of the cases of traumatism in which the process of repair is turned into a morbid rather than into a healthful direction? This sympathetic action of the nervous system, illustrated, as it is, by so many brilliant modern discoveries, is an old-fashioned doctrine, a doctrine sanctified by the teachings of Hunter, Travers, Cooper, Brodie, a doctrine which modern research amply justifies, and which explains many things which in my judgment are simply inexplicable on the absorption theory. Is it wise to shut our eyes to every pathological suggestion but that which explains all forms of fever, and every accident of inflammation by septic absorption? Is it wise to ignore altogether the influence of nerve condition as the starting-point of wound accidents? Is it wise, in short, and to return to my original query, to reject every other explanation of the success of Mr. Lister's practice except that which we derive from Mr. Lister's theory?

This brings us naturally to the consideration of the second question propounded, viz.: *Are there no agencies which modify the tendency to ill-behaviour in wounds besides those which prevent putrefaction?* The answer to this question clearly depends upon the answer given to question number one. If, as I have attempted to show, there are causes, other than septic influences, which may act unfavourably on wounds, then the agents which may control these other causes would fairly come within the purview of this second question. And first let it be fairly understood that inflammation following injury, with all its possible disastrous consequences, is recognized by all to be the most constant and the most important factor in the morbid conditions now under consideration. Inflammation, uncontrolled, produces the suppurations, ulcerations, sloughings, which so often give the fatal character to wounds which were originally reparable. Inflammation delays healing, multiplies suffering, exhausts vital power, and in short, is the great adversary which we have to combat from the beginning to the end of our treatment of severe injuries. From the large importance accorded by all to this process of inflammation, this second question might fairly resolve itself into this: Are there any agencies which will control the tendency to inflammation in wounded parts? Mr. Lister claims to absolutely prevent it by excluding the germs upon which it depends as its cause; our question is simply can we control it? The answer of modern therapeutics would be, I think, unhesitatingly in the affirmative.

Leaving out of consideration at present all those indirect influences of which every careful surgeon gladly avails himself, as rest, position, food, medication, regimen, etc., I contend that there are certain agencies which act directly, locally, and at times powerfully in controlling or even in arresting inflammation. Of these agencies I recognize chiefly three, viz., cold, local bloodletting, and the action of certain drugs. Of the first two I have no occasion here to speak particularly. No surgeon who has witnessed the effect of ice bags applied to an inflamed joint, and no physician who is familiar with the effects on peritoneal inflammation attained by the cold pack on the Kibbee cot, can have any doubt about the efficiency of cold in controlling inflammation; and it is certainly unnecessary to cite any illustration of the value of bloodletting under the same circumstances. Of the last class of agencies which control inflammation I wish to speak more in detail; and for brevity's sake I will confine my remarks to one single drug, viz., carbolic acid. The testimony as to the singular power which this drug possesses of controlling inflammation is derived from various sources, and bears upon cases of inflammation attacking mucous and cutaneous surfaces, traumatisms and granulating wounds. Some of this testimony is popular, and some is scientific. As to the popular judgment, I doubt if any remedy in the Dispensatory has established in the popular mind a more positive and distinct character as a queller of inflammation than this drug carbolic acid; as witness the universality of its use in all conditions and all stages of inflammation of the throat, nares, urethra, bladder, and generally to all those mucous membranes to which it can be easily applied, or rather perhaps to those to which its application can be easily regulated. And, moreover, I have the belief that if the popular mind were not so exclusively occupied with the action of carbolic acid as an antiseptic, we would more distinctly and more frequently recognize its marvellous power of controlling inflammation in the immense number of inflammatory conditions to which it is now so indiscriminately applied. Probably it is from a similar pre-occupation of the attention among scientific observers, that I find so few utterances bearing upon this point from men whose opinion would be authoritative. Going back, however, to the year 1860 we find Lemaire, who was one of the earliest writers on phenic acid, struck with the effects of this substance on the well-being of wounds, causing them, as he says, to clear off rapidly, to granulate actively, and to heal promptly. Lionel Beale in his "Disease Germs" says: "The true explanation of the undoubtedly beneficial action of the carbolic acid antiseptic treatment may be very different from the explanation offered by Mr. Lister. To me it appears much more probable that the carbolic acid acts directly upon the growth and multiplication of the bioplasm of the part." Mr. J. R. Wolfe, in the *Med. Times and Gazette*, Nov. 25, 1865, says: "As far as my experiments have gone I am satisfied with its beneficial results. It causes a healthy granulating surface counteracting the tendency to hyperplasia and suppuration." Alex. McCrae, writing in the *British Medical Journal*, 1872, says of carbolic acid: "By its use pain is decreased or becomes altogether nil; excessive granulations are arrested; unwholesome discharges are checked, bad odours are dispelled; the tendency to destruction of tissue is replaced by a proclivity to heal." These observations were recorded before the antiseptic properties of carbolic acid were made so prominent as they now are, and when, therefore, the exclusion of germs was not provided for. They show, therefore, the impressions of the writers as to the beneficial action of the drug on inflamed tissues without regard to its action as a germ destroyer.

How carbolic acid acts in producing its peculiar effects has not by any means been distinctly ascertained, and, perhaps, as is the case with many of our most efficient medicines, its *modus operandi* may never be perfectly understood. Something, however, may, I think, be learned in this direction by observing its effects on healthy mucous and cutaneous surfaces exposed for a length of time to its moderate influence. Take, for example, the effect on the adjacent parts when the spray has been kept playing upon them during a prolonged operation; or, what perhaps comes nearer to our own experience, the effect on the hands of the operator of this same spray during a long operation. The effect is benumbing, and if very long continued, almost paralyzing to the nerves of sensation. This to me is a suggestive fact. If the moderate application of carbolic acid through the unbroken cuticle produces so evident an effect on the nerves distributed under it, may we not fairly suppose that when applied directly to wounded surfaces the same kind of benumbing and paralyzing effect may be exercised more powerfully on the nerves which are here exposed naked to its influence?

It is not, I think, a strained or unfair inference, that the continuance of this action may have some retarding effect upon the vital actions which, whether for repair or disease, are excited by the very existence of the traumatism. I have myself felt very strongly that just here we are touching upon a most important feature in the explanation of the results of Mr. Lister's successful treatment of wounds. My attention once directed to this point, I think I have verified this power, which I claim that carbolic acid possesses, of modifying vital actions in many striking instances. I have watched commencing surface inflammations rapidly diminish and disappear under carbolic dressing when no exclusion of germs was attempted. I have seen wounds of all kinds and degrees of severity go through their stages of repair without a trace of inflammatory complication, and even when inflammatory complication had not been prevented. I have seen the morbid actions which threatened infinite mischief so modified and controlled by carbolic acid constantly applied as to be practically robbed of their usual power to inflict damage. These things I have seen when no thought of germs or their exclusion was in our minds, in so many cases and so constantly repeated that I have come to believe that this peculiar virtue of carbolic acid is the true and sole explanation of the success not merely of Mr. Lister's practice, but of that of many other able observers who have agreed with Mr. Lister only in one thing, viz., that they have kept their wound surfaces constantly under the influence of carbolic acid.

Some common cause is necessary in order to explain the acknowledged success of those who, in every country in Europe, as well as in our own, have deviated more or less widely from Mr. Lister's requirements; and this common cause is, as far as I can learn, to be found in the use in every case of the carbolic acid, more or less carefully, and more or less constantly applied.

In corroboration of the views above given as to the power of carbolic acid in controlling inflammation, let me state that many of our wounds treated by this drug not only showed no trace of inflammation, but what was much more striking, and what forced itself on the attention of those who were watching the cases with me, ceased to show the ordinary evidences of repair, and remained passive and unchanging from day to day, so that it almost seemed as if all vital action in the affected tissues was suspended or destroyed. This has been so marked, and has so pressed itself on our attention, that early in our studies we became convinced that there was a point in every case when the continued use of carbolic acid began to hinder or to prevent repair, and it has been a matter of careful study to ascertain, as nearly as possible, exactly at what point the application ceased to be merely antiphlogistic, and became anti-reparative. I feel quite sure that this point can be approximatively ascertained in every case, and most happily we have felt pretty well assured that when this anti-reparative action of the remedy begins to show itself distinctly, its antiphlogistic influence has ceased to be important, and still more that its antiseptic powers are no longer required.

A still further corroboration of the depressing power of carbolic acid is found in those cases which have been reported in which its too free use has produced direct and immediate death of the exposed surfaces. I find one such case reported by Mr. Ollier, of Lyons, in the *Bulletin de Thérapeutique*, 1872. It was a child, æt. 13, who had, after a slight splinter wound of finger, dipped the part in strong solution of carbolic acid, and afterwards dressed it with the same. The next day, when seen by Mr. Ollier, the finger was dead, and in due time separated in the usual manner. Dr. Tillaux, of the Hospital St. Antoine, reports in the same journal, in a previous year, two similar cases, where a saturated solution produced gangrene in one case of a finger, and in another of some toes. We have at this moment in the hospital a man in whom, for a slight ulcer on the foot, a strong solution of the acid had been applied by a druggist outside, in whom much inflammation, or rather excoriation and vesication of the skin had taken place; but at one point where the acid had been most thoroughly applied about the ulcer, there was a space of four square inches over which the integument was dry and dead, as though burned with a hot iron, so dry and bloodless that it seemed perfectly certain that a process of death could not have been preceded by any inflammatory condition, but was the immediate effect of depressing power of the agent employed.

I do not pretend to claim that the facts, and opinions, and suggestions which I have thus presented prove positively my assumption as to the controlling power of carbolic acid; but I do claim that they make a case not unreasonable or improbable, and one which challenges further attention mainly because it explains, better than any other assumption, the facts which have now so largely accumulated through the extensive employment over the civilized world of this curious, interesting, and, as I believe, most valuable drug.

The third question propounded is, Are all Lister's details necessary? This question has its interest chiefly in the fact that some of these details are onerous, some are expensive, some are useless, and some are positively injurious if we do not find their justification in the absolute requirements of the case. Thus, for example, the application of a full Lister dressing demands a great deal more care, and a great deal more time, than an ordinary dressing. It can rarely be committed to an assistant, the surgeon himself being required at least to be present at and superintend each of the earlier dressings, if not to conduct them with his own hand. This is a tax which every conscientious surgeon would willingly pay for such great benefits as Mr. Lister promises to his diligence and his devotion; but at the same time, if all this time and all this personal attention be not necessary to success, the sooner we know it the sooner we shall be released from a tax which is intolerable if it cannot be shown to be inevitable. In the same way, the expense of the materials used would be little thought of, if the cost could be shown to be no greater than was absolutely necessary. In private practice, even among the poor, where usually single individuals and single cases are concerned, this matter of expense does not assume so much importance as it does in those large institutions, sometimes poorly enough endowed, where great numbers require surgical treatment, and where the difference between the old and the new methods of dressing involves a very large increase of outlay, when sometimes such increase can with difficulty be afforded. Again, if by any modification of theoretical view, any part of these multitudinous details can be shown to be useless, it is greatly desirable to be freed from the useless part. Thus, in the minds of a great number of good and careful observers there has arisen a doubt as to the usefulness of the spray, and many are convinced that, without abandoning any part of the original theory, there is good warrant for omitting the spray altogether, as not necessary in securing all protection which Mr. Lister's theory calls for against germs and their fatal effects upon wound surfaces. Once more, some of the appliances insisted on are positively injurious, and should be left out if not absolutely necessary. Of these injurious features we have the over-heating of the parts by piling so thick and so heavy dressings, the sweating and maceration of the surfaces covered over so largely by impervious layers of protective and Mackintosh; and last, and not least, the retention in and about the wound not only of the discharges from the sore, but also of the atmosphere which, under the close confinement, must be constantly charged with all the impurities which are generated during the progress of its cure. If, now, any of these onerous, expensive, useless, or injurious details are not clearly essential; if success can be achieved by measures less laborious, less expensive, useless, or injurious, I contend that it is of the highest importance that these unnecessary details be intelligently modified or altogether omitted.

The fact that some, at least, of these details are unnecessary would appear from two kinds of proof. 1. Theoretical. 2. Statistical. Of theories there are two which, if accepted, would render some of these details unnecessary. First, that which entirely rejects the view that atmospheric germs are the prime agents in producing surgical accidents; and second, that which, accepting in full the prevalence and evil influence of these atmospheric germs, considers that their evil influence may be counteracted by less energetic and less minutely careful opposition than the full Lister method demands. With the first perhaps we need not now stay to deal. So indisputable is the evidence in favour of atmospheric germs being the cause, directly or indirectly, of certain septic accidents, that we may fairly acknowledge that where any intelligent doubt exists upon this point, it is rather a doubt as to the extent and directness of germ action, and not by any means a rejection in toto of the influence of these germs. Leaving, then, this theoretic view for the present, let us look for a moment at that which accepts the germ theory in its fullest extent, and yet which holds that all Mr. Lister's minute prescriptions are not necessary to obviate their evil effects. These observers contend that bacteria have not, or at least have not been proved to have, such astounding power in penetrating and permeating all surfaces, whether natural or traumatic, in such an incredibly short space of time, that if vigilance be relaxed but for a moment, if but a small corner of the defensive works be left unguarded, so that a corporal's guard of these deadly enemies, which are keeping such vigilant watch for their opportunity, can gain admission, the battle is lost and the citadel captured. They contend that by careful and constant use of germicides on the exposed surfaces, the fatal particles can be in part kept out and in part slaughtered in the breach, or even within the walls, with the same certainty and success with which a few straggling assailants, getting entrance into a well-garrisoned fortress, would be dealt with, provided the main body of the besiegers were successfully held in check. If to these ideas we add, that a very large number of the best minds in the surgical profession have great doubt as to the efficacy of the spray, as commonly used, as in itself a germicide,[1] and who believe that freely applied to the exposed surfaces, either in aqueous or oily solution, the carbolic acid is all-sufficient for the protective duty assigned to it, I have presented, as far as is necessary for my present purpose, the views of those who do not regard all Mr. Lister's minute details of treatment as in all cases necessary.

But secondly, the test of experience—the experimentum crucis—may be invoked in the settlement of these questions. The limits of this article forbid my going into statistical detail. It is well known that Mr. Lister has never published any full statistics of his results. Until he does we have nothing with which to compare our own. Suffice it here to say, that as compared with the published results of his followers, we can show results achieved by surgeons who have departed from Mr. Lister's instructions, which are so excellent as to challenge the superiority of the original over its modifications. These published results are now numerous and authoritative, and offered by men of first rank as observers and careful reporters. I would like to bring together a large number of such witnesses to support my views, as I could easily do; but shall content myself with presenting my own experience, which has now become, from my opportunities in the Roosevelt and in the New York Hospital, sufficiently extensive to give it some weight in the discussion of the points at issue.

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[1] See a valuable article on this subject by Dr. L. A. Stimson in the January No. of this Journal.

I began soon after Lister's views were announced by treating all cases of severe injury, and all operation wounds, strictly according to his plan, and with a degree of success which was eminently satisfactory. Doubts as to the necessity of the spray soon presented themselves. It was left off—all other Lister precautions being retained—and with results which seemed equally good. Hearing of Ranke's experiments with thymol, I, with some of my colleagues, tried it in numerous cases, both in private practice and in hospitals. So many doubtful and so many disastrous results presented themselves that we soon began to distrust and before long to abandon the drug altogether. This clinical experience with the thymol first turned my thoughts towards the idea that it might not be the antiseptic virtue of either carbolic acid or thymol which was the most important or valuable in the treatment of wounds, for both these agents were conceded to be potent germicides, and of the two perhaps thymol had been shown to be the most powerful; and yet here were a series of cases where, with equal care in their employment, the better germicide failed to give as good results as the feebler one. This seemed naturally to suggest that there might be some property about carbolic acid besides its power of destroying germs, which gave it in practice a decided superiority over its then much-praised rival. This superiority I soon came to believe arose from a power to control all vital actions, and among them conspicuously those which partake of the nature of inflammation. It is upon this idea that I have been pondering and experimenting during the last two years, and it is the result of these lucubrations that I have proposed to set forth in this paper.

The fourth question proposed, viz.: Will strict adherence to Mr. Lister's details secure invariable success? I do not propose to discuss. I rather introduced the query to emphasize the statement that such invariable success is claimed for the antiseptic method. I do not assert that Mr. Lister has, in so many words, claimed for his method an absolute certainty of result; but no one can doubt that the general tenor of his teaching, and that of the enthusiastic apostles of his views and promulgators of his doctrines, would plainly indicate that they at least believed in such certainty. And truly the doctrine, if true, demands a uniformly successful result, and a single positive exception would be sufficient to overturn the whole theory. One single case in which perfect antiseptic treatment did not protect the patient from septic accident, would be a fatal blow to the soundness of antiseptic theories, and accordingly such exceptions are not admitted, and they are ruled out under the specious plea that where accidents do occur during the course of antiseptic treatment, these accidents are due, not to any fault of the principle, but to a failure in its application, and that some carelessness or haste, or other imperfection in the mode of applying the dressings, has left some loophole open through which disease germs have entered, and that thus success has been prevented.

To this, of course, we have no reply to offer, except that, in the hands of others, failure has occasionally attended the most careful Lister treatment, where the most diligent and candid search could not detect the slightest flaw in the complèteness and accuracy of the compliance with Mr. Lister's requirements.

I confess I do not think that all these interesting and important questions connected with the antiseptic method can at present be definitely settled, and that perhaps it is wiser to decide that statistics show for the Lister treatment a much larger proportion of success than can be claimed for any method preceding his discovery; but that as yet it is not clearly shown that his method is so superior to all the modifications of it that have been and are now being tried, as to vindicate its somewhat arrogant pretensions to be the true and only gospel of the surgery of wounds.

These preliminary considerations I have thought necessary to make, in order to present intelligibly the real subject of my paper. This real subject is in fact a report of a method of treatment of wounds and injuries which I have adopted during my last ten months of almost continuous service in the New York Hospital, to which I have been led by the reasonings presented in these preliminary remarks, and which, while it differs *toto cœlo* from Mr. Lister's plan, has been attended with a success which seemed to me to warrant a reconsideration of the whole matter of the so-called antiseptic treatment of wounds.

The plan itself consists in the free and constant use of appropriate solutions of carbolic acid in water, no care being taken to keep the wound shut off from the influence of the atmosphere, and provision being made for the inner surface and cavities of the wound being constantly, or at least frequently, moistened by the carbolic acid solution. This is the outline of the plan, but its details can perhaps be best presented by describing its application to a case, to which case, fully described in all its details a little further on, I must for the present refer the reader.

To those who have taken the trouble to read carefully the considerations presented in the previous pages of this communication, the prominent idea presented in this method of treatment will be easily appreciable. The idea underlying the whole series of experiments, for such I am willing to consider them, is that by controlling the tendency to inflammation by the use of carbolic acid, applied constantly and in an effective way to the injured surfaces, we can obviate the dangers to which, in the process of repair, these wounds are liable, and that the success of the treatment will be in direct proportion to the degree of control which, by that method, we are able to secure. This has been the leading idea in my mind during all my study of the cases I am about to recount; and while I acknowledge that they are not numerous enough to definitely establish my theoretical views, yet I do feel that when such results as I have to report follow a method of treatment, based entirely on the antiphlogistic idea, and excluding entirely the antiseptic view, I have a right to challenge the attention of those who believe in nothing but sepsis and its results, and at least to demand a comparison of methods, on a scale large enough to be authoritative.

The cases now to be reported have not been selected. They embrace all the wounds or open injuries which were not so extensive as to prove fatal within a few hours, or so slight as not to admit of special dressings, which were received into the hospital during the ten months embraced in the report, as well as every operation considerable enough to give an opportunity for the use of the new method. A certain proportion of them therefore were wounds made in operation, some in opening formidable abscesses, some by machinery, some by falls variously injuring the soft parts, and some, and by far the most interesting to us, were compound fractures of the bones. In these latter injuries it commonly happened that a considerable time had elapsed from the moment of receiving the injury to the time of the patient's coming under treatment, an interval abundantly sufficient, if Mr. Lister's views of the activity and industry of atmospheric germs be correct, to have determined a fatal inflammation in every one of them. The report is founded on the results of the treatment of all these cases, all being subjected to the same method, the chief difference among them being in the length of time which had elapsed before they were brought under treatment.

Case I.—Jas. N. G., a vigorous and healthy man, æt. 35, was admitted to the New York Hospital April 13, 1879. About a year before his admission I had been called to see him with a dislocation of the astragalus, which after faithful endeavour, I had been unable to reduce completely. He got about with the deformed limb after a time, but found walking difficult and painful, and to make matters worse, inflammation and abscess occurred on the most prominent point of the displaced bone, which was followed by exposure and caries of the denuded surfaces. Under these circumstances, with the concurrence of my colleagues, I removed the astragalus on the 17th of May. There was nothing noteworthy about the operation, except that the bone was very rigidly fixed in its new position, requiring a great deal of force to dislodge it, and excepting also that when the bone was at last removed the deformity was not overcome till the external malleolus had been removed to the extent of nearly three-quarters of an inch. This gave a fair control of the foot, and it could now be brought into a promising position. A splint had been prepared, consisting of a plaster of Paris casing extending from the knee nearly to the ankle and attached to a foot-piece by two broad straps of brass which went wide of the ankle-joint as they passed to support the foot-piece. By this arrangement the foot was held steady while by the divergence of the brass straps easy access could be had to every part of the ankle-joint, so that the dressings of the wound could be applied and removed without any movement of the foot of the wounded ankle. The wound, which consisted of a semilunar incision extending from behind and below the internal malleolus in a curved line over the dorsum of the tarsus to the external malleolus, was dressed by bringing the edges together with carbolized silk sutures, a long drainage-tube having first been passed across the deeper part of the wound from one malleolus to the other. This tube had been prepared so that the part within the wound had been perforated with a number of holes, care being taken that all that part of the tube which projected from the wound should be free from openings. The wound was then covered with the ordinary prepared carbolized gauze laid on in three or four thicknesses, first being well wetted with one-fortieth solution of carbolic acid, and so arranged upon the surface of the wound that the ends of the drainage-tube were free as they projected on either side. This we generally accomplished by cutting holes in the dressing opposite the points of entrance and exit of the drainage-tube, though sometimes the tubes could be brought out between the folded pieces of which the dressing was composed. This retained in position by a few turns of the thin gauze bandage also wetted with carbolic acid solution completed the dressing. The limb was then suspended from a framework so that it was raised about six inches from the bed, and swung easily from side to side on every motion of the patient's body. This arrangement was found extremely comfortable, and permitted the drainage from the wound to be freely discharged from the lower opening. Four times a day a solution of one-fortieth carbolic acid was thrown through the drainage-tube with an ordinary syringe, and continued till the fluid discharged at the lower opening was perfectly clear. The result of this manipulation was that the fluid forced by the syringe into the upper end of the tube found its way freely into the cavity of the wound, distending it and then found its way out at the lower orifice carrying with it all the fluid secretions which otherwise would have been more or less confined within the wound. This distension of the wound by the injected fluid would not of course happen to any great extent if the whole tube including its lower orifice were free from obstruction, but it very often happened that the outlet was impeded by plugs of dried pus or by clots and then the penetration of the fluid to all the recesses of the wound was very complete—a penetration which we considered so desirable that sometimes the lower orifice of the tube was pinched by the finger and thumb, while the injection was being made, for the express purpose of securing it.

The accompanying illustrations will explain the mode of placing the drainage-tubes in various wounds, and the manner in which they are brought through the completed dressings. Fig. 1 shows the tubes as they are ordinarily placed in a compound fracture of the leg. Whenever the laceration of the deeper parts brings the wound near to the integument on the opposite side of the limb, a counter-opening is made and the tube passed through the limb either between the broken fragments or in close proximity with them. When, however, the injury of soft parts is confined mainly to the tissues between the broken bone and the external wound, then the tube is passed down to the fracture and brought out at a little distance from the point of entrance, as seen in Fig. 2. This figure also shows the usual mode of dressing of compound fractures with a strong plaster casing with a large fenestra opposite the wound. In a case like that represented at Fig. 1, when the tubes traverse the limb another fenestra is made at the point of their exit. The wound exposed in the fenestra is lightly dressed with carbolized gauze through which the tubes are allowed to protrude from one to two inches. Fig. 3 shows the completed dressing of a very bad case of compound fracture of the elbow-joint.

Fig. 1.

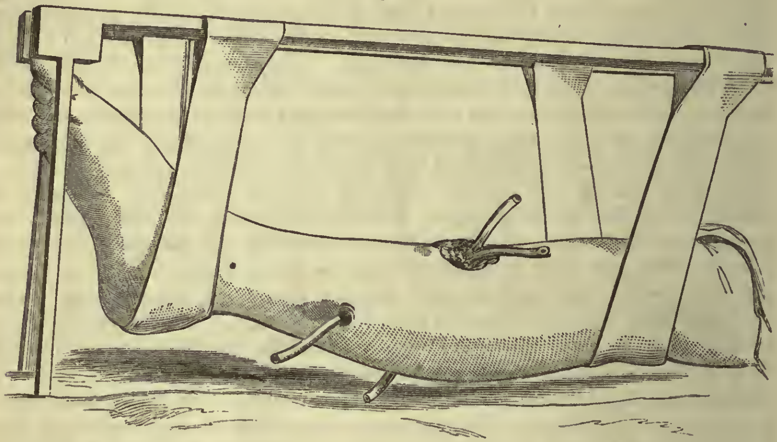
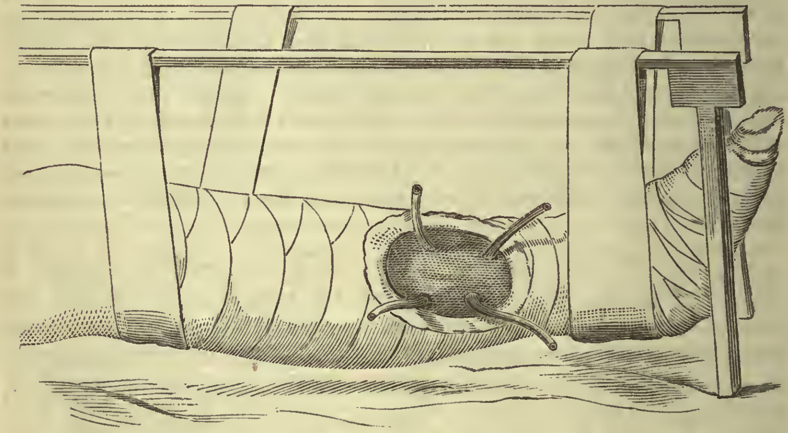


Fig. 2.

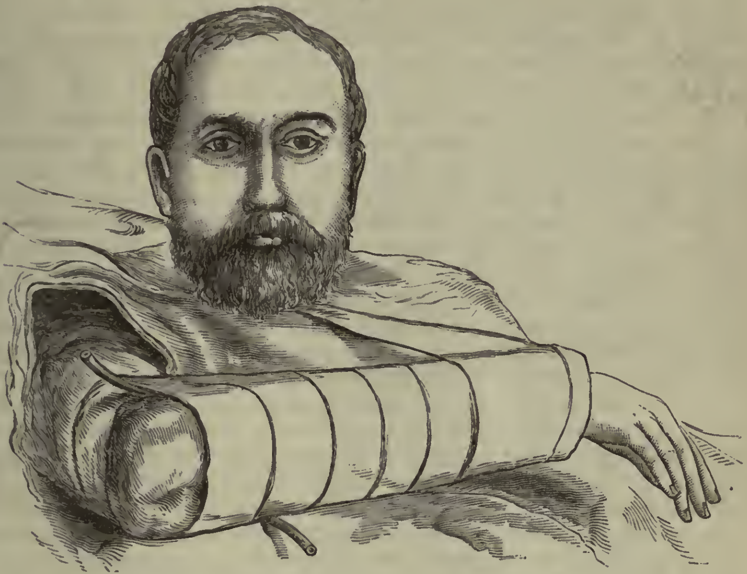


The tube traversed the opened joint and projected above and below the dressings, as shown in the cut.

In this way the discharges were prevented from accumulating in the case we are relating, or even from staining the dressings, and the wound was treated with the greatest possible comfort to the patient, and almost without a complaint of pain after the first day or two succeeding the operation.

His temperature card here annexed (Case II. of the general list) shows that the thermometer never was above 100°, and that during almost the entire period of treatment it was not far from the normal point. His appetite was undisturbed, his spirits perfect, his sleep very rarely interfered with. In short he passed through the whole period of treatment in a condition as near normal, and with as few signs of local or constitutional disturbance, as any man could do, while completing the repair of so large and formidable a wound as that necessarily caused by the excision of the astragalus. The wound gave no sign of inflammation; no pus at any time dropped from the end of the tube, and the injected fluid was commonly returned only slightly turbid at first, soon becoming perfectly clear. No smell could at any time be detected about the wound, and the staining of the dressings was evidently due more to the injection than to the discharge. The progress seemed so perfectly favourable, the wound so free from complaint, and the dressings so clean, that we allowed the original dressings to remain, watching from day to day for an indication to change it, until the thirteenth day, when curiosity rather than a conviction of necessity induced us to inspect the wound. This was done on the 9th of May. We found but little indication of retained discharge, the edges of the wound clean and free from any evidence of inflammation, and about one-third of the wound firmly adherent. Round the points of exit and entrance of the drainage-tube there was no inflammation, and the part of the wound which gaped slightly was covered by a well-formed layer of granulations. The sore was washed with a one-twentieth solution of carbolic acid, and dressed as before. A few days after, finding everything in *statu quo*, the tube was removed, and though the wound was washed daily with carbolic acid solution, some being injected into the sinus, this was soon given up, and the parts dressed solely with Peruvian ointment.

Fig. 3.



Under this the wound healed rapidly, and he was discharged from the hospital June 25, with a good, and we have reason to hope, a useful joint.

Case II.—Was one of Syme's amputation; performed for gangrene of the toes. The patient H. L. was a healthy man of 35 years, who had had his foot caught between a tightening hawser and the deck, crushing the metatarsal region severely. This was two weeks before his arrival at the hospital, and gangrene of the injured parts had already proceeded so far as to render amputation the only resource. Syme's method was adopted and carried out in the usual manner on the 17th of April, 1879. Two drainage tubes were introduced from the two sides of the incision, and brought out through a buttonhole cut for the purpose in the posterior part of the flap. The rest of the dressing, after a sufficient number of sutures to hold the flap firmly in place, was made by a few folds of Lister's gauze moistened with carbolic solution, and held in place by a few turns of bandage. No protective was used, and no Mackintosh, and the dressing merely covered the wound without extending more than a couple of inches from it in any direction. These outer dressings were occasionally wetted with the carbolic solution, and the same was injected through the tubes three or four times a day, the leg being suspended so that the lower orifice of the tubes should always be clear. The progress of the case was as favourable as possible in all respects. Some sloughing of the flap took place along its edges, but the centre adhered well, and the margins granulated and healed as soon as the sloughs had separated. Though the sloughy material was retained in contact with the tissues, and necessarily shut up in the dressings during many days, yet no signs of inflammation showed themselves, no evidences of systemic or local blood-poisoning, and no constitutional disturbance of any importance during the whole course of the case. The temperature never rose above 101°, and that only on one day. Most of the time it was below 100°. The tubes were removed on the 8th of May, and the parts dressed with balsam of Peru. On the 2d of June the record shows the wound healing rapidly, and on the 22d he was discharged, with an excellent stump.

Case III.—Was one of secondary amputation of the leg for compound dislocation of the ankle. The original injury was treated strictly by the Lister method, but did badly; sloughing took place to a considerable extent, and laying bare large surfaces of the bones made a cure impossible. He was a man near sixty, not a very vigorous specimen, and constitutional irritation soon became very threatening with delirium, stupor, high temperature, and rapid failing of strength. Convinced that a large part of his constitutional suffering was sympathetic, I proceeded to amputate, with approval of my colleagues, in the midst of these most unfavourable conditions. At this time the temperature varied from 100° to 103°; his stupid delirium alternated with paroxysms of violent mania, and everything indicated the most profound involvement of the nervous system. The operation was performed in the usual manner, low down in the leg, with lateral skin flaps. This was done March 13th, and the wound dressed, with a single drainage tube, in the same manner as above described. As showing that his symptoms at the time of operation depended more upon pressure upon the nervous system than upon blood poisoning, I may note that within a few hours after amputation the whole aspect of affairs was changed; his night was one of refreshing sleep, and his delirium had given place to a quiet and comfortable intelligence. Next morning he was more nearly in a natural condition than he had been for many previous days. The wound did not behave particularly well, the flaps separated a good deal, and soon sloughing took place. The wound was kept as sweet as a sloughing wound could be by frequent injections through the tube, and most of the time very comfortable, a condition which seemed to the patient so clearly produced by the injection that he frequently asked for it when the wound was paining him, and always expressed relief from its application. No local inflammation, and no constitutional disturbance appeared during the progress of the cure; the temperature never rising above 100°. The tube was removed on the 22d, and the wound dressed with balsam of Peru. Slowly but steadily the wound healed; and he was discharged cured, with a very promising stump, May 6, 1879.

Case IV.—Mrs. T., æt. 37, was admitted to the hospital March 26, 1879, with necrosis of the humerus, occupying the middle third of the bone. On the next day an operation was performed by which several sequestra were removed from points so far distant from each other that though the whole amount of dead bone removed was not large, yet the involucrum had to be chiselled away to so great an extent that a gaping chasm, seven inches in length, was left on the outer and anterior face of the arm, when the operation was completed. This wound was dressed as heretofore described, with one drainage tube running obliquely through the deepest part of the wound. Advantage was taken of one of the fistulous tracks to bring out the end of the tube from the posterior surface of the arm, thus securing a dependent opening while the patient was lying down. The arm was supported on a pillow to keep the lower orifice of the tube free. The progress of the case was uninterrupted. She suffered no pain, and she had no signs of local inflammation or general fever. Scarce any discharge of pus showed itself, and in fact the dressings were so entirely free from odour and from soiling that we allowed them to remain untouched until April 10th, when the wound was dressed for the first time, just two weeks from the day of operation. It was found so well filled in by granulation, and healing so healthfully, that the drainage tube was removed and simple dressing applied. She was allowed to return home on the 16th April, with the wound very rapidly improving.

The next three cases were bad lacerated wounds without fracture of bones.

Case V.—L. S., æt. 55, came into the New York Hospital May 16, 1879, with a very extensive wound of arm, caused by thrusting it through a pane of glass. The tissues were largely and deeply cut in various directions, making a very formidable wound. He was received about four hours after the injury, and was dressed at once on the through-drainage plan, two tubes passing across the deepest portion of the wound. Everything was perfectly quiet during the healing, and free from inflammatory complication. The tubes were removed on the 1st and 2d of June, and he was discharged cured on the 10th.

Case VI.—M. K., æt. 22, was brought in May 23d, having been struck by a falling iron shutter, which had inflicted a severe lacerated wound on the thigh. The surface wound was only about three inches in length, but upward and forwards a deep pocket was formed at least six inches in extent. This very dangerous wound was dressed in the usual manner, and in order to secure through drainage a counter opening was made opposite the most dependent part of the wound for the emergence of the lower end of the tube. No complication or interruption presented itself during the progress of cure. June 2d the tubes were removed, and June 26th he was discharged cured.

Case VII.—J. M., æt. 24, admitted June 9, 1879, with a bad lacerated wound of arm on its posterior surface, just above the elbow-joint, caused by being run over by a truck. Two surface wounds, each about two inches long, existed, but were accompanied by much laceration of the deeper tissues, and, of course, by great contusion. The condition of this wound rendered inflammation and sloughing exceedingly probable, but under the through-drainage dressing not a bad symptom showed itself, and he was discharged cured June 20th.

Case VIII.—This was a case of cold abscess on the side of the thorax, which did not seem to depend upon any disease of the rib or of the lung, and which had been slowly increasing for about two years. The patient was a man of thirty, and in other respects he appeared to be well. He had had little or no pain in the swelling, which was rather abruptly prominent from the surface, elongated in form, six inches in length, firm to the feel, so that it had been considered a tumour, and its removal advised. It was opened April 15, and four ounces of pus evacuated. A drainage tube was then passed through the length of the abscess, emerging at its most depending point. No other dressing was necessary. The cavity was injected several times each day, and filled up without a symptom of inflammatory reaction. On the 21st the tube was removed, and on the 24th he was discharged, against my advice, but apparently well.

The remaining cases are all examples of compound fracture, a class of injuries in which I have thought that the through-drainage system offered some peculiar and very great advantages. They are always anxious cases, often dangerous, not unfrequently fatal. Every hospital surgeon knows how important and how alarming are all symptoms of inflammation in open fractures. How much of the fatality to limb or life depends upon an extensive suppuration; how much the chances of good recovery are diminished, if, at any point, the inflammation reaches the stage of gangrene; how prone the morbid action, once lighted up at the seat of the injury, is to spread in all directions, compromising life as much by its extent as by its severity, no one can fail to have noticed who has had even a limited experience in these always serious cases. I think that the testimony of all the best men who have tried it would be that the practical results of Mr. Lister's method in the treatment of compound fractures have been eminently satisfactory. In our own experience in this city it has been a revolution, so uniform and so striking have been our favourable results. It is now comparatively a rare thing for us to be disappointed in our attempts to save a limb which has undergone this injury, provided there has been a reasonable ground to found our hopes upon; and indeed I cannot but fear that our confidence of success leads us sometimes to save limbs by the Lister treatment, which in old times would have been amputated, which are utterly useless when saved. Twice I have been obliged to remove limbs which I had thus saved, because their condition, when entirely healed, was so hopeless and helpless that their owner asked to be relieved from their encumbrance. This broad fact of the eminently successful treatment of open fractures by Lister's method seems to me very suggestive, and to demand a moment's notice in passing from the bearing it has upon Mr. Lister's theory. We acknowledge that open fractures behave well under Lister's treatment, and yet they present conditions very different from those which Mr. Lister demands as essential to success. They are wounds always left open to the access of atmospheric germs for hours, sometimes for days, before they are protected by the dressings. They are deep, involving many tissues in injuries which unfit them for good repair. They are irregular in form, and generally so situated as to be incapable of full drainage by ordinary methods, and yet they do wonderfully well provided inflammation have not, by delay, gained too strong a hold. This seems to me a pregnant fact; and when accepted as a clinical result on a large and authoritative scale, it seems very much like an absolute demonstration that the access of atmospheric germs to a wound surface is not always nor in all cases so fatal to success as Mr. Lister so uniformly and so strenuously maintains. I must confess I have sometimes wondered when I have seen my zealous friends going through all the pomp and circumstance of spray and protective at each dressing of a compound fracture, involving perhaps five minutes of exposure, when I remember that the wound was originally exposed to the poisonous action of the atmosphere for twenty-four hours, or perhaps longer. I earnestly commend this thought to my candid readers, and ask them to say if compound fractures, which are exposed for hours before treatment is commenced, do not behave worse than operation wounds made under spray, where is the clinical justification of that troublesome and disagreeable, and, as I believe, utterly useless part of the proceeding.

And here, perhaps, I ought to present a feature in which I think the through-drainage method in compound fractures presents a great advantage over the full Lister dressing. Mr. Lister requires a large surface round the wound to be covered by his carbolized gauze and the protective Mackintosh to guard against the dreaded germs creeping in under the edges of the dressing, and thus gaining access to the wound. This large surface, covered by thick and heavy dressings, interferes very greatly with the application and effective action of the necessary splints, which, of course, must be put on outside of the dressing. The splints, thus put on, conceal the dressings so that it is not possible properly to watch their condition; and moreover, and what is much more important, they have to be removed entirely every time the wound is dressed. This handling of a compound fracture when its supporting splints are removed, is always a disaster; and one of the greatest modern improvements in the art of treating fractures is found in the various contrivances by which we now succeed in maintaining firm support while necessary changes are being made. I cannot myself see any way to obviate this cardinal difficulty, if we must adhere to Mr. Lister's large dressings. In the through-drainage method of dressing, this difficulty does not occur. The compound fractures are put up as soon as may be in the plaster-of-Paris splint, with large fenestræ cut opposite the wounds. The small surface about the wound which is thus exposed is dressed with about four thicknesses of unprepared gauze dipped in a solution of carbolic acid one to forty. The drainage tubes are brought through holes cut in the gauze, and then a gauze bandage, similarly wet, is placed round the splint to keep everything in place. No protective is used, and no Mackintosh. Occasionally the dressings are wetted with the carbolic solution, usually at the time when the wound is syringed as above described. This dressing is renewed as often as may be necessary, but of course without any movement of the fractured bone, the splint being untouched; and from the perfect manner in which the discharges are constantly being removed, the changes of dressing are comparatively rare.

Another point which should be made here has reference to the drainage tubes. As ordinarily used, pushed down to the bottom of the wound, and just emerging from its surface, with no counter opening to permit the emptying of the cavity, and with the external orifice closed by the contact of the dressing, they answer their purpose imperfectly enough. But when in addition to these unfavourable conditions we have the orifice of the tube pressed on by the splints, which must be bound somewhat firmly over the dressing in order to support the fracture, we have a mechanical arrangement which does not seem to me well adapted to favour the escape of fluids from the recesses of the wound. Indeed, the value of a drainage tube ought to depend upon the completeness with which it will drain; and tubes arranged as they usually are will certainly not drain a wound with the same thoroughness as they would if left with both orifices wide open, as they always must be in the method I am now advocating. This arrangement of the drainage tubes is, of course, the cardinal feature of my plan, and by it are secured two elements of success of prime value, viz., the free and perfect evacuation of all noxious fluids from the wound, and the easy and thorough admission of the carbolic solution to its every crevice and corner. That the admission of atmospheric germs through the open mouths of the tubes has not been injurious is pretty strongly indicated by the success of the practice, and the uniform testimony of the patient has been that the injection of carbolized fluid has been grateful and comforting; so much so that in a great many cases the patients would send for the house surgeon, saying that their wounds were beginning to feel uncomfortable, and asking to have the injection performed for their relief. Some anxiety has naturally arisen in our minds as to the dangers of carbolic acid poisoning, and we have, of course, watched with some apprehension for the appearance of symptoms indicating its toxic action. Nothing of the kind has presented itself; no patient has shown the first suspicious symptoms. I do not underrate the danger, but I think it is one common to all instances in which carbolic acid is largely used, and I feel quite confident that by reason of the limited cutaneous surface exposed to the acid solution, as well as by the perfect evacuation of the injected fluids, we have less to fear from carbolic acid poisoning in cases treated by the through-drainage plan, than in those treated according to the regular Lister method. All these points will, however, be better illustrated by the cases I am now to relate:—

CASE IX.—Julia A., æt. 25, was brought in April 28, 1879, with a compound fracture of the leg received from a fall about an hour before admission. The fracture was in the lower third, very oblique, not much comminuted, and the wound small, about two inches above the ankle-joint. The wound was enlarged and the tissues about the ends of the bones were found to be very much lacerated, so that the finger passed into the wound reached nearly to the skin on the opposite side of the limb. At this deepest part of the wound counter-openings were made, and two drainage tubes were introduced, running close to and partly between the ends of the fragments. Small and light carbolized gauze dressings were applied, and the tubes brought through in the usual manner. A plaster-of-Paris splint was then applied to the limb, encasing it from the toes to the knee, and in this, as soon as it was dry, fenestræ were cut opposite the original wound, and opposite the points of exit of the drainage tubes, through which fenestræ the dressings could be watched, and changed whenever necessary without disturbing the fracture. The treatment was thenceforward conducted precisely as in the other cases reported, and the progress was so favourable that the dressings were not changed for more than a week. On the 9th of May, the wound granulating finely, the tubes were taken out, and the wound dressed with balsam of Peru. On the 18th of June, good union having been secured, the splints were removed. Two small necrosed fragments of bone came away before the wound finally healed, and she was discharged cured October 6, 1879.

CASE X.—W. L., æt. 55, admitted June 13th. His right arm had been caught between an elevator rope and the drum, causing severe injury of the elbow-joint. The whole joint was deeply contused, and a large irregular wound led down to a fracture of the internal condyle of the humerus, and it was thought also that the coronoid process of the ulna was broken off. The wound communicated with the elbow-joint, which was largely opened on its posterior and inner aspect. This very formidable and unpromising wound was first washed very thoroughly with carbolic acid solution 1 to 20, and then the gaping edges brought together with a few stitches, after passing a drainage tube across the wounded joint, so arranged that it would drain the whole track of the wound. Light dressings being then applied, the limb was placed at a right angle in a tin guttered splint, with a proper opening for the emergence of the drainage tubes. The patient maintained his general condition surprisingly, no manifest constitutional reaction following. The local behaviour was equally favourable. The wound was dressed on the 16th, and showed no signs of inflammation, a considerable part of the skin wounds having united. From this time he was dressed about twice a week, and at no time was there any free purulent discharge. The injections were made three or four times a day as in the other cases, and though the fluid must necessarily have found free access to the joint, there was never any indication of synovial inflammation. The final results were extremely satisfactory, and he was discharged cured August 19, 1879.

CASE XI. was very similar to the last. J. C., æt. 52, was injured in the right elbow by the wheel of a railway car from which he fell while it was in motion, though it was not certain that the wheel passed over the limb. He was admitted May 30, 1879, and examination revealed several lacerated and contused wounds about the region of the elbow, one of which opened into the joint. A portion of the internal condyle was broken off and removed. Two tubes were inserted into the wounds and brought out through dependent counter-openings, and the limb, dressed as above described, was supported in an angular tin splint. This wound did not behave locally quite as well as the last reported. Some sloughing of bruised integument took place, but without any serious inflammatory threatening. The sloughs soon cleared off, the wounds granulated well and healed soundly without any bad symptom on the part of the wounded joint, and he was discharged cured August 15, 1879.

CASE XII.—This case was one of very severe injury, and presents several points of such interest that I shall give it with some fulness of detail. Jas. D———, æt. 16, was brought to the hospital May 13, 1879, having fallen through an elevator shaft or hatchway. He fell through six stories, striking, however, on several projecting points on his way down sufficiently to break in some degree the velocity of his descent, and possibly thereby to save his life. His injuries were a simple fracture of the right humerus, a bad compound fracture of left humerus about its middle, and a fracture of the left fibula, which was not discovered at the time of his first examination. The most serious feature of his condition, however, and that which held his life in peril for many days, was the great depression of all the powers produced by the tremendous concussion to which his body had been subjected. This showed itself in a pulse so feeble that it could barely be perceived, habitually very frequent, and also in a heart beat that could scarcely be distinguished by the hand laid over it, and with heart sounds so faint and feeble that at times they were almost imperceptible. With this there was a feeble voice, imperfect inspiration, unwillingness, almost incapacity, for any muscular exertion, and a pallor of surface which, as it was most marked in the face, gave the impression that he was constantly on the eve of fainting. There was no paralysis, however, and fortunately no indication of concussion or compression of the brain. The wound on the left arm was very extensive, running in an irregular line about five inches along the inner and anterior aspect of the arm, at some points closely approaching the brachial artery. Owing to his extreme prostration, which had, no doubt, been much aggravated by loss of blood, we were content to lay the broken arms in as good condition as might be on pillows, the compound fracture being thoroughly washed with a 1 to 20 carbolic acid solution. Two drainage tubes were introduced through the deepest portions of the wounds, emerging at counter-openings made at dependent points. The pillows were arranged so that the lower ends of the tubes were free, and jute was placed under them to catch the discharge. By the utmost care, and the most watchful nursing, and the intelligent use of food and stimulants, reaction became gradually established, and by the 17th his condition seemed to warrant an attempt to put the compound fracture into proper supporting splints. A tin angular splint with fenestra for the drainage tubes was prepared, and we proceeded to move the limb, carefully to place it upon the splint, when a gush of blood was noticed from the wound, evidently from a large artery. Grasping the arm above the wound the brachial was easily controlled, and no further hemorrhage occurred. This gave us a chance quietly to explore the wound, and it was soon discovered that the brachial, where it lay exposed in the wound, had been eroded, presenting a smooth oval opening, communicating largely with the cavity of the vessel. The artery, which was very accessible along a considerable part of the wound, was bared above and below the opening, and securely tied at both points, when, of course, all anxiety with regard to hemorrhage was at an end. From the position and smoothness of the erosion I suspected that the trouble might have been caused by the pressure of the drainage tube, as it crossed the course of the artery, and this point I thought desirable to settle positively. The tubes had been taken out in the hurried movements which followed the hemorrhage, and the position of parts had necessarily been disturbed while seeking for its source. The tubes I carefully replaced, and placing the limb as nearly as possible in the position in which it had lain before the bleeding, it was immediately evident to all that the lower tube, which passed directly across the artery, had pressed upon the vessel so that the beating of the artery against the elastic tube had gradually caused the erosion which finally produced the hemorrhage. This was to me a unique experience in the use of drainage tubes, but the practical importance of the fact seemed to make it proper that it should be circumstantially recorded. Of course, it is possible that such an accident might happen whenever a drainage tube comes in contact with a large artery, but I take much comfort in believing that the peculiarly depressed condition of my patient's reparative forces made the accident possible in his particular case, while there need be but little apprehension of its occurrence in the ordinary use of these most valuable surgical appliances. The occurrence, however, suggests caution and care.

The limb was placed upon the splint which had been prepared for it, the drainage-tubes were replaced, and the wound dressed in our usual way. No further accidents occurred in the arms. The favourable progress of the case was slow but steady. The wound granulated well, and, after the tubes were removed and the wound dressed with balsam, coaptation splints were applied. The wound finally healed without necrosis, and good union was obtained.

While these things were going on in the arm, mischief was brewing below. The left leg, of which he had made but little complaint, began to swell and to be painful, and fluctuation was soon discovered, and six ounces of pus evacuated from the outer aspect of the leg, just below its middle. Much relief followed this discharge, and a drainage-tube was passed into the abscess and out by a dependent counter-opening. Deep trouble was still going on, however, and in a few days afterwards another opening was made on the posterior aspect of the limb, again evacuating a good deal of pus. This opening was so situated that the drainage-tube could be brought through it, thus draining the whole track. This was done, and the wound from that point made favourable progress. The probe, however, passed into the opening detected bare bone. By certain movements of the foot and lower part of the leg crepitus could be elicited, and it soon became evident that the fibula had been broken about a hand's breadth above the ankle. This was the starting-point of the suppurative action, which in its turn had prevented or delayed the process of repair in the broken bone. This seemed worthy of record, as presenting an example of that very unusual course of a simple fracture, where it becomes compound by exciting suppuration about the point of injury. It is but right to say that in this case the extreme prostration of the vital forces during the first ten days after the accident may fairly be held to explain much of ill-behaviour of the wounds even in a late stage of their progress. The final result was perfect recovery without necrosis, though the cure was, as it might be expected to be, tedious and prolonged. He was discharged cured, October 31st.

These cases are all that I think it necessary to recite in illustration of the methods of through drainage and of the general behaviour of wounds and injuries treated under this system. They seem to me to show very conclusively that absolute exclusion of atmospheric germs is not necessary to the successful treatment of these accidents, and, taken in connection with the large experience of other observers who have treated their cases by the more or less constant and thorough application of carbolic acid, they very strongly confirm my conviction that the real element of success lies in the peculiar power which this drug has of controlling and modifying vital actions. This conviction I unhesitatingly avow, and most confidently entertain. I wish it, however, to be distinctly understood that the proposed plan of treatment does not stand justified by this theoretical view alone. It may very well be that the antiseptic powers of carbolic acid are the valuable, and perhaps the only valuable, influences which are to be recognized in the successful results obtained. It may be that the constant presence of the acid on the surfaces of wounds and in the discharges from them, does, by prevention of putrefaction, prevent inflammation and its disastrous consequences. Even if this view be insisted on, and putrefaction be acknowledged as the sole and universal cause of wound accidents, then, I think, that this application of carbolic acid is as effectual in preventing putrefaction as Mr. Lister's most elaborate dressing can be, and that this constant antiseptic action can be secured by less troublesome and less cumbersome apparatus than that which Mr. Lister demands.

Whichever theoretical view prevails, however, I venture to believe that the plan here offered will be found most effective and most convenient and most reliable of the different methods of treating wounds by the constant application of carbolic acid to their surfaces.

I give below a tabular statement of all the cases treated by through drainage during ten months' service. As I could not burden my communication with details of so many cases, I have thought that a fair general idea of the work done would be gained by a simple list of the cases, with their temperature tables as recorded during the first ten days of treatment. If to this I add that every case went through its successive stages without inflammation at any time sufficient to defeat repair, and that in every case the result was equal to the best attained in the most favourable instances of the given traumatism; that few abscesses were met with, and none of the character of diffused suppuration; that no compound fractures failed to unite, and that in only a small number was there any necrosis of the ends of the fragments, I have given the chief facts which are important in the history of the most satisfactory series of surgical cases which have ever fallen under my observation. I do not offer them as statistics from which any safe deductions may be drawn; but I feel that, occurring, as they have done, under the supervision of one observer, in one institution, at one period of time, and embracing all the cases which, in that period of time, were suitable for the treatment, they have at least established a claim for careful consideration, and fairly justify a trial of a method which, though in a narrow sphere, has given such uniformly successful results.

No. 1.—H. O. T., æt. 37. Extensive necrosis of humerus; *sequestrotomy.* Temperatures 102, 100, 99°; never rose above normal.

No. 2.—E. S., æt. 53. *Compound dislocation of thumb* and *laceration of hand.* Temp. 100, 102, 100, 103, 100, 100, 98, 103, 98°.

No. 3.—J. C., æt. 52. *Compound fracture of humerus*, opening elbow-joint. Temp. 101, 101, 102, 101, 101, 101, 99°.

No. 4.—W. E. J., æt. 30. *Cold abscess* opened and evacuated. Temp, 100, 99, 100°; no further rise.

No. 5.—H. J., æt. 45. *Fibroma of gluteal region* removed. Temp. 99, 99, 98, 98°; no further rise.

No. 6.—J. Q., æt. 60. *Amputation of leg*, lower third. Temp. 98, 100, 99, 99°; no further rise.

No. 7.—P. Q., æt. 55. *Chisel wound of knee-joint.* Temp. 100, 98, 99°; varying from abscesses forming—final cure.

No. 8.—J. D., æt. 20. *Compound fracture of malleolus.* Temp. 100, 99, 100, 98, 98°; once afterward 102°.

No. 9.—H. L., æt. 35. *Syme's amputation* for gangrene following injury. Temp. 98, 99, 101, 99, 99, 99, 100°.

No. 10.—L. S., æt. 55. *Lacerated wound of arm.* Temp. 99, 99, 98, 98, 98°; never rose above normal.

No. 11.—J. H. G., æt. 35. *Excision of astragalus.* Temp. 99, 99, 100, 100, 99, 99, 99°.

No. 12.—M. K., æt. 22. *Extensive laceration of thigh.* Temp. 100, 98, 98°; no further rise.

No. 13.—J. M., æt. 24. *Laceration of elbow.* Temp. 102, 101, 98°; no further rise.

No. 14.—W. L., æt. 55. *Compound fracture into elbow-joint.* Temp. 99, 98, 102, 101, 102, 101°; afterwards normal.

No. 15.—A. J., æt. 27. Necrosis of femur; *sequestrotomy.* Temp. 99, 99, 101, 98°; no further rise.

No. 16.—J. A., æt. 30. *Compound fracture of leg.* Temp. 100, 101, 100, 100, 100, 100, 101, 100, 100°.

No. 17.—J. D., æt. 16. *Compound fracture of arm* and other very serious injuries. Temp. 103, 102, 104, 102, 105, 103, 102, 101, 100, 99°.

No. 18.—A. McD., æt. 60. *Compound fracture of leg.* Temp. 100, 98, 98, 99, 100, 100°; no further rise.

No. 19.—J. M., æt. 43. *Compound fracture of leg.* Temp. 101, 102, 100, 101, 101, 99, 102, 101, 100°.

No. 20.—J. S., æt. 25.—*Compound fracture of leg.* Temp. 99, 100, 98, 101, 100°; no further rise.

No. 21.—J. M., æt. 19. *Compound fracture of leg.* Temp. 100, 103 101, 101, 100, 99, 98°.

No. 22.—P. O'N., æt. 55. *Fracture of leg,* becoming compound by slough. Temp. 98, 98, 99, 99°; no further rise.

No. 23.—B. H., æt. 60. *Incised wound* of neck and of forearm. Temp. 100, 99, 99, 99, 99, 99°.

No. 24.—E. W., æt. 12. *Compound fracture of humerus,* severe lacerations. Temp. 97, 103, 101, 101, 101, 101, 100, 101, 99°.

No. 25.—A. C., æt. 15. *Lacerated wound of thigh.* Temp. 100, 101, 104, 100, 99, 99, 99, 98°.

No. 26.—J. H., æt. 31. *Compound fracture of thigh.* Death from shock in twenty-four hours. Temp. just before death, 106–3°.

No. 27.—E. C., æt. 21. *Compound fracture of metatarsus. Lisfranc's amputation.* Temp. 98, 100, 101, 102, 102, 102, 101, 100, 101, 102, 100°.

No. 28.—J. S., æt. 38. *Compound fracture of ulna.* Temp. 99, 98, 99, 98, 98, 98, 98°.

No. 29.—D. F., æt. 54. *Lacerated wound, very extensive, opening, elbow-joint.* Temp. 98, 100, 99, 98, 98, 98, 98°.

No. 30.—J. M., æt. 32. *Amputation of thigh* for arthritis of knee. Temp. 98, 99, 98, 100, 100, 99, 99, 99°.

No. 31.—M. M., æt. 44. *Compound fracture of leg.* Temp. 98, 103, 100, 102, 99, 100, 100, 100, 99°.

No. 32.—J. O'B., æt. 40. *Compound fracture of leg,* twenty-four hours without treatment. Temp. on admission, 103°; afterwards, 103, 103, 101, 103, 102, 100, 98°.

No. 33.—F. Q., æt. 21. *Amputation of forearm. Compound fracture.* Temp. 98, 100, 99, 101, 101, 101, 103, 100, 100, 99°.

No. 34.—F. B., æt. 25. *Stab wound of back,* extensive. Temp. 99, 100, 99, 98, 100, 99, 99°.

No. 35.—A. S., æt. 3. *Necrosis of femur* after compound fracture. Temp. 101, 100, 100, 99, 99, 99, 98, 98°.

No. 36.—E. M., æt. 23. *Removal lipoma of neck.* Temp. 98, 98°; never rose above normal.

No. 37.—P. S., æt. 38. *Removal of schirrus mammæ.* Temp. 100, 100, 99, 99, 99, 99, 99°.

No. 38.—M. L., æt. 20. *Compound fracture of leg.* Temp. 98, 103, 102, 102, 100, 101, 102, 100, 99°.

No. 39.—M. A., æt. 48. *Removal large tumour of thigh.* Temp. 98, 100, 99, 98, 100, 100, 99, 100, 99, 98°.

No. 40.—S. N., æt. 23. *Compound fracture of leg,* severe laceration. Temp. 101, 101, 102, 103, 102, 102, 101, 102, 101, 100°.

No. 41.—J. T., æt. 55. *Compound fracture of leg.* Temp. 98, 100, 99, 99, 99, 99, 100, 99°.

No. 42.—F. McN., æt. 43. *Large cyst of foot;* opening. Temp. 99, 100, 98, 100, 99, 99, 99, 99°.

No. 43.—G. B., æt. 24. *Removal of carious rib.* Temp. 98, 99, 98, 99, 97, 98, 98°.

No. 44.—J. K., æt. 19. *Compound fracture and dislocation of ankle-joint.* Temp. 104, 102, 102, 102, 101, 101, 99°.

No. 45.—L. S., æt. 11. *Necrosis radius; sequestrotomy.* Temp. 99, 99, 100, 99, 99, 98, 100°.

No. 46.—J. C., æt. 25. *Compound fracture of leg.* Temp. 100, 101, 101, 101, 101, 101, 100, 100°.

No. 47.—L. N., æt. 24. *Necrosis of femur; sequestrotomy.* Temp. 103, 103, 103, 100, 100, 99, 99, 99°.

No. 48.—J. F., æt. 52. *Re-amputation of thigh.* Temp. 98, 100, 101, 102, 103, 100, 100, 99°.

No. 49.—D. D., æt. 25. *Opening large cyst* of sole of foot. Temp. 98, 103, 105, 103, 103, 100° ; no further rise.

No. 50.—J. D., æt. 12. *Necrosis of radius; sequestrotomy.* Temp. 100, 99, 98, 98, 98, 98, 98°.

No. 51.—J. D., æt. 40. *Compound fracture of femur.* Temp. 101, 102, 102, 102, 101, 100, 99, 100, 99°.

No. 52.—R. P., æt. 26. *Compound fracture of femur.* Temp. 100, 102, 103, 102, 102, 101°.

The result in a few of the later cases in this table there has not been time to ascertain. No case, however, has as yet presented a serious symptom.

ARTICLE II.

THE PORRO MODIFICATION OF THE CÆSAREAN OPERATION, IN CONTINENTAL EUROPE; CHRONOLOGICALLY AND ANALYTICALLY EXAMINED: SHOWING THE SUCCESS OF THE NEW METHOD; ITS ADVANCE FROM ITALY TO OTHER COUNTRIES; AND ITS DIMINISHING FATALITY UNDER A BETTER KNOWLEDGE OF THE REQUISITES FOR SECURING SUCCESS; THE WHOLE STATEMENT BEING PREPARED WITH A VIEW TO ENABLE OUR OBSTETRICAL SURGEONS TO DECIDE WHETHER WE SHOULD INTRODUCE THIS METHOD INTO THE UNITED STATES. By ROBERT P. HARRIS, A.M., M.D., Member and Ex-President of the Philadelphia Obstetrical Society, etc.

In the number of this Journal for October last, I presented, in the form of a review, a very imperfect and unsatisfactory record of the Porro operation, the defects of which record no one now better understands than I do myself. There is this, however, to be said as an apology—I did the best that I could at the time, and the errors that I fell into were due to the very imperfect and incorrect statistics furnished us in the accessible journals of the old world. At the time of its preparation I determined, if possible, to obtain a full tabular statement of the cases, arranged in the order of their occurrence, and giving at a glance all the important features of each individual operation, such as I had prepared on the "Cæsarean Section in the United States." It was not my purpose at the time to do this myself, but to arrange for having it done by some European writer who had already manifested an interest in the work.

With this end in view, I opened a correspondence with prominent gynæcologists on the Continent, stating the defective points in the statistics presented to the profession, and giving an outline of the tabular record I have since perfected. Instead of securing some one, as I had anticipated, to prepare and publish the paper abroad, where the cases occurred, the offer to assist me was substituted, and I was induced, with many misgivings, to undertake the work, which has grown in interest as it has advanced; and now, when near completion, has attained a degree of perfection which, at its commencement, I should not have believed possible, with the writer and his field of operations so widely separated.

In a reply from Dr. Egidiȯ Welponer, the assistant of Prof. Karl von Braun-Fernwald, of the Allegemeine Krankenhaus, the great general hospital of Vienna, better known to us as simply "Carl Braun,"[1] came the very kind offer to furnish me with abstracts of all the cases which he had been able to collect. To meet this unexpected offer without giving unnecessary trouble, and at the same time secure as many of the important points of each case as possible, I prepared a tabular form, such as I here present, and filled up as many of the points in thirty-one cases as my means of information would enable me to do. This I mailed to Dr. Welponer, who numbered the operations in order; supplied many of their dates ; filled up a large number of vacant points, and added four more cases to the list, making thirty-five. After the return of the paper, I made a more thorough examination of the accessible and recently arrived reports, filled up the blanks still more, and then, to complete the work, opened a correspondence with those operators whose reports were incomplete.

The letters and pamphlets received enabled me to present the most complete record which has yet been prepared, and one decidedly more free from the mistakes, which may be readily detected in the best of those which have already appeared. Some of these which I shall refer to before I close, are so singular that I can only account for them by presuming that the work of research was committed into the hands of students, or beginners in the profession. All the work here presented has been done directly by Dr. Welponer or myself, and I have examined the notes of every case that was accessible, to see that errors had not been committed.

Thus much for the foundation upon which my record rests for its accuracy and reliability. I am aware that it is not perfect, as my experience teaches me that this is not a measure to be attained in any statistical work; but I have left nothing undone that appeared likely to secure a better record. Any one who has examined the statistics that have been so frequently appended to reports of Porro operations will have noticed how very unsatisfactory were the statements made. We find the last name of the operator ; the name of his city or town; possibly the year of the operation ; the result to the woman, and, in some few instances, the fate of the fœtus. Even the year has been sometimes erroneously given, a fact that I am made aware of from its having led me to place the first operation by Spaeth next to that of Porro in my review, and only twelve days later in time, when Prof. Spaeth had really the fifth case, and there was more than a year between his and the first.

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[1] In one European table, "Carl Brown" and "Fernwald" are credited with operations as two individuals.

What we require to know with regard to these Porro cases, in order to understand the real merit of the operation, is not simply who operated, and where, and what was the result to the woman, whether death or recovery; but all the prominent features of each, and in the order of their occurrence. By this plan we learn at once the improvement, if any, in the results attained; the character of the subject operated upon, and her fitness for enduring so dangerous an operation; the fate of her child, as well as her own; and the manner and time of her death, where such has been the termination. It is also of importance to know which were treated in hospital, and whether any preparation was made beforehand to improve the health of the woman, so as to fit her for the operation when required. All of these points I have endeavoured to present in the appended table.

It may hardly seem requisite, at this date, to explain what the Porro method of performing, or rather terminating, the Cæsarean section is; but from the questions asked me in private, I presume it may be well to say, in few words, that after the evacuation of the uterus, its neck is constricted until all hemorrhage is arrested, the organ drawn out and cut away, and the stump secured like the pedicle in ovariotomy in the lower part of the abdominal wound. The operation has in almost all instances been performed under the spray of dilute carbolic acid, and the Lister method of dressing and management strictly carried out. Drainage tubes through the Douglas cul-de-sac, and the abdominal wound, have also been employed, sometimes to the number of three or four, but in almost every case at least one through the cul-de-sac and vagina.

Without a careful examination the removal of the uterus in this manner would appear to be even a more hazardous procedure than the old operation; but experience, first with the lower animals, and then with patients in the old lying-in hospitals of Europe, has shown that the advantage lies with the new method—at least in the general run of cases. The Cæsarean operation is one thing in a hospital, and another in private practice as regards its average mortality. It is also of moderate danger when performed *very* early, and very fatal when done at a late period of labour, as shown by my American record, in which there are only 4 hospital cases in 112, proving that hospitalism had but little to do with the mortality.

Origin.—With no intention of detracting from the merit of Prof. Porro, of the University of Pavia, who will always be remembered as the successful inaugurator of this new method in Europe, I must state, to be historically correct, that he was not the first to originate the operation, either in theory from experiments on the lower animals, or practice upon the human female. It has long been known by experiments upon gravid dogs, cats, and rabbits, that the Cæsarean section is more fatal to them than the removal of their uteri after ligation of the vagina or cervix. It is a singular fact, that to a namesake of the woman Cavallini, on whom Dr. Porro operated, is credited the first of these experiments. To Dr. Cavallini (1769) is now awarded the merit of having first recommended the ablation of the uterus after the Cæsarean section, as a less dangerous expedient than the old operation. He formed this opinion from the effects of a series of experiments, such as have since been tried with the same results by Blundell, Geser, Fogliata, Porro, and others.

I have found no repetition of the experiments of Cavallini until the time of those made by Prof. James Blundell, of London, which were first given to the world in a lecture delivered before the students of Guy's Hospital in 1828. In a paper read before the Medico-Chirurgical Society of London in 1823, before these special experiments were made, Dr. Blundell writes:—[1]

> "*Extirpation of the Puerperal Uterus.*—When the Cæsarean operation is performed, or when a patient is evidently sinking after rupture of the womb, might not the whole uterus be taken away? . . . Let it be remembered, that the wound formed by the extirpation of the womb, and which might probably be much reduced in extent by drawing the parts together with a ligature, would merely take the place of a more formidable wound; that I mean formed in the womb by the Cæsarean operation; and which, by the operation here performed, would, together with the uterus, be taken completely out of the body. . . . Experiments on animals—rabbits, for example—which have very large wombs, might be of use here."

Between 1824 and 1828, in the continuance of his vivisections, Dr. Blundell tried the proposed experiments on rabbits, losing all by the Cæsarean section, and saving three out of four under the plan of ligation and ablation. The language of his lecture, and more pointed recommendation of the method of extirpation in the human female, after these experiments, will be found in the number of this Journal for October, 1879, page 507.[2] As Dr. Blundell repeatedly in his lectures, and the editions of his obstetrical work, urged the adoption of this change in the operation upon the human female, because of his confidence in its greater safety, it is somewhat remarkable, in view of the great mortality of the old operation in England, that no one ever tested the value of his suggestion in his own country. By living, however, to very advanced life, this learned obstetrical author found that his views were proved to be correct in another land.

Since the extirpating experiments of Blundell, similar ones have been tried several times by different vivisectors, who appear to have acted independently of each other. Geser, in 1862, after uterine ablation, saved two bitches out of four; Dr. Giacinto Fogliata, of the Royal University of Pisa (Veterinary Department), in 1874, saved three non-gravid bitches out of four. Dr. Porro, in the same year, removed the uteri of three gravid rabbits, and saved them all. He did not know of the experiments of Fogliata, although published in 1875, until after his own success on the human subject. Neither had he heard of the Storer operation, and I presume, also, of the Blundell experiments, as he does not mention them in his report. He may possibly have heard of Dr. Cavallini's work, but even this is doubtful. He appears to have been influenced by the results of ovariotomy, the success of cases of uterine ablation by abdominal incision under Péan,[1] and the valuable effects of the Lister treatment in hospitals.

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[1] Blundell's Obstetric Medicine, 1846, p. 759.

[2] Lancet, vol. ii., 1828, p. 167.

The first operation of removing the uterus of a parturient woman was performed in Boston, on July 21, 1869, by Prof. Horatio R. Storer (now of Newport, R. I.), on a patient three days in labour, with a dead and putrid fœtus in utero. An examination under chloroform showed that delivery through the pelvis was impossible, as it was nearly blocked up by a large tumour, leaving but an inch and a half of open space on one side, through which the head of the fœtus could be felt above the pubes. The idea of Dr. Storer in opening the abdomen was, 1. To make a reliable diagnosis. 2. To remove the tumour if possible, and bring away the fœtus afterward through the pelvis; and 3. To open and evacuate the uterus, if the tumour should be found immovable. The incision being made, the tumour was found both in utero and in the pelvis, and to be firmly attached. An exploratory incision into it showed it to be fibro-cystic, and occasioned much bleeding. Removal of the whole mass being impracticable, the uterus was opened and a mature fœtus removed. The womb not contracting, on account of its being dense and thickened from disease, the hemorrhage was alarming, and to save the woman, Dr. Storer, "with his usual self-possession, decided to remove the whole mass as far as possible, which would include the uterus, as well as the fibro-cystic tumour of the left wall." This was then done by ligating the cervix, cutting away the uterus, cauterizing the stump, putting on a clamp, and fixing the stump in the abdominal wound. The woman died in sixty-eight hours. The pelvic portion of the tumour was not removed.

Several European correspondents appear to regard this case as out of the line of Porro operations, because he operated with a view to relieve the dystocia and remove the tumour, and only as a matter of necessity decided to remove the uterus, the hemorrhage being only controllable by ligation of the cervix. Be this as it may, Dr. Storer did perform the Cæsarean operation, and afterward ligate and remove the uterus. The complication of tumours made the case very unfavourable; and the result is the common fate of almost all Cæsarean cases, undertaken because of uterine tumours. A very remarkable exception in the United States was the case under the care of Dr. Olcott, of Brooklyn, in 1874. The woman died on the fourth anniversary of her operation, from an attack of peritonitis, which was believed to have resulted from the presence of the tumour.

The case of Dr. Storer, the only one that has occurred in this country, does not appear at the head of the table, because it is an exclusively European record.

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[1] Péan saved 17 cases out of 24, between 1869 and 1875. See Dr. Samuel Pozzi, "De la Valeur de l'Hysterotomie dans le Traitement des Tumeurs Fibreuses de l'Uterus." Paris, 1875.

We now come to an examination of the cases, which I have arranged in tabular form for convenience and ready reference; taking them in order, except where several occur in the same city or hospital, when they will be considered in succession.

These abstracts and comments should be read conjointly with their corresponding minutiæ in the tabular record, as without this addition they will be found very incomplete.

CASE 1.—Operator, Dr. Edoardo Porro, Professor of Midwifery and Clinical Obstetrics in the University of Pavia. This case was a favourable one for the operation, and made still more so by a preparative medical and dietetic treatment lasting twenty-four days. The woman was a young rachitic subject, and taller, with one exception, than any of the same class in the list, some of whom will be seen in the height column to have been dwarfs of a metre or a little over it. Giulia Cavallini was a year younger than Dr. Gibson's patient in this city, and in labor a much shorter time. With the advantages presented, we should expect in private practice in the United States to save from 70 to 75 per cent. of such rachitic women under the old operation. But Dr. Porro operated in an old hospital, of which he says: "*Cavallini is the first operated upon by the Cæsarean section, who has been cured, in the Obstetric Clinic of Pavia.*" Dr. Chiara, of Milan, writes in a letter recently received, that out of 62 operations—old style—performed by Porro, Billi, Lazzati, and himself, all had proved fatal but three, which were saved by Billi out of his 37 cases. The balance, 25, under Porro, Lazzati, and Chiara, were all fatal. From this standpoint we see that the cure of Madam Cavallini was a decided improvement over the ordinary result of the old operation.

Dr. Porro had decided beforehand to operate by extirpation; gave his patient the benefit of an early operation, and used the plan of Lister to its full extent. He arrested the hemorrhage and secured the cervix by the serrenœud of Cintrat, which appears to be still the favourite constrictor in these operations on the Continent. Some have tried the écraseurs of Chassagnac and Billroth, the instrument of Maissoneuve, and elastic of Esmarch, etc.; but the wire-loop is most frequently employed, and has produced the best results.

Dr. Porro has given a very minute account of his case in a memoir of sixty pages,[1] with two full-length photographs of the woman, and two views, back and front, of the uterus, with the serrenœud of Cintrat. To produce anæsthesia required 9 minutes; the operation, 19; the sewing up, 7; and the medication, 8=43, which was 26 for the operation proper—a shorter time than the average required.

CASE 2.—Operator, Professor Giovanni Inzani, of the Royal Obstetric Institute of Parma. Seven months elapsed after the operation of Porro before the same was repeated in kind by any European. The memoir of the Pavian originator was published in October, 1876, but the work of introducing the new method advanced very slowly. Unfortunately for its advancement, the second, third, and fourth operations were performed upon subjects whose diseased or exhausted conditions rendered their cases at least desperate, if not altogether hopeless. Such was the state of the woman to whom Prof. Inzani was called as a consultant by her medical attendant, at a little town some twenty-three miles from Parma. The woman was pregnant with her fourth child, and had not had any difficulty with the other three; but now there was an insurmountable obstacle discovered in the form of a large tumour, believed to be malignant in character, which filled up the lower pelvis. The patient was broken down in health, and her condition made her operation one of unusual danger. After death the tumour was pronounced to be an encephaloid growth.

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[1] Ann. Universali, Oct. 1876, p. 289.

Case 3.—Operator, Dr. Alfred Hegar, Professor of Obstetrics in the University of Freibourg, Germany. Woman highly albuminuric; was seized with convulsions. Operation performed; placenta removed without hemorrhage. No fluid permitted to escape into the abdominal cavity. Cervix tied with a double metallic ligature, and drawn by the serrenœud; then cut away by the écraseur. During first two days apparently doing well, except that she had an annoying cough; on third day symptoms of septic peritonitis. Passed a drainage-tube through Douglas's cul-de-sac, and much turbid fluid escaped. Died on April 1st.

Case 4.—Operator, Dr. Geronimo Previtali, of Bergamo, Italy. The woman was believed to be almost moribund when she was taken to the hospital, having been in labour five days. Owing to her exhausted condition, she sank and died, as was anticipated.

Case 5.—Operator, Dr. J. Spaeth, Professor of the Theory and Practice of Midwifery in the University of Vienna. This case presents several points of special interest, viz.: 1. It was the first of a series of cases that were operated upon by the medical staff of the Allegemeine Krankenhaus of Vienna. 2. It was the first non-fatal case of Cæsarean section in a hundred years, not only in the Krankenhaus, but in the whole obstetric practice of the city. 3. It was the first of three cases of malacosteon, all operated upon in the Krankenhaus within a period of three months. 4. And it was the second early operation as well as recovery.

This woman was the oldest but one in my table; had had five natural deliveries; one craniotomy after her malacosteon began; three miscarriages; and was pregnant for the tenth time. Prof. Spaeth had her under a tonic and dietetic treatment for twenty-four days before her labour came on, and he operated very soon after its commencement.

The recovery of the patient gave a fresh impetus to the "utero-ovarian amputation," and created quite a sensation in medical circles in Vienna. It prepared the way for a better future in Viennese Cæsarean operations; made obstetricians more hopeful and less timid in operating, and showed that by care, promptness, and the antiseptic system, hospital cases might be saved in the long fatal and much dreaded Cæsarean operation.

Case 6.—By the same operator and in the same hospital. Unlike the preceding case, there was no opportunity given to prepare for the operation by medical treatment, as the woman did not enter until she had been about a day and a half in labour. This long delay exhausted the woman, caused the fœtus and placenta to become putrid, and as a consequence to poison the patient, who already exhibited evidences of septic infection. She was in her fourth pregnancy; had had two natural deliveries and one with forceps, and the fœtus in utero was giving rise, by its putrescence, to the evolution of gas, shown by the sound on percussion. How long it had been dead does not appear, but from the advance in decomposition both of it and the placenta, it probably died prior to the commencement of labour. The failure of the operation under the circumstances would be regarded as inevitable, but for the fact that women have recovered under apparently similar conditions; as, for example, Case 9. The production of septicæmia from decomposition within the body we can much more readily comprehend, than the escape therefrom, where a fœtus has been for weeks or months in a state of advanced decay in the uterus or in an extra-uterine cyst. Such patients emaciate, have an accelerated pulse, are no doubt poisoned, but still recover health and strength after the offending cause is removed.

CASE 7.—Operator, Dr. Carl von Braun-Fernwald, Prof. of Clinical Obstetrics and Gynæcology in the University of Vienna. Case also under treatment in the Lying-in Department of the General Hospital.

Like its immediate predecessor, this case was a very unfavourable one for the operation, the woman being far advanced in, and exhausted by, malacosteon. She had given birth to six children naturally: the seventh was delivered by version, and she was now pregnant with her eighth. Her fœtus was transverse: her pelvis collapsed; and she could not walk. Labour was not protracted, but the condition of the woman favoured the result in septicæmia and death: compare with Cases 21 and 24.

Malacosteon has furnished but a small percentage of the pelvic deformities which have led to the Porro operations. Considering the diseased condition of the subjects, it is remarkable that four out of the six cases should have recovered, and that but one child was lost. English obstetrical writers claim that the disease is quite uncommon in the British isles, and still their Cæsarean record shows a list of 50 cases, against 24 of rickets, in a table of 118 operations. Six of the former and five of the latter were all that survived under the old form of operation. Rachitic subjects, except the very diminutive, are as a general rule more promising than those advanced in malacosteon. Prof. Spaeth claims that the removal of the sexual organs cured his patient (Case 5) of the bone disease, there being left at the end of a year no symptoms of the osteo-malacia.

CASE 12.—By the same operator, and in the Krankenhaus. This was the second under Carl Braun, and his first to recover. It was also the first of five operations on rachitic subjects, three of which were saved. The subject of No. 12 was a dwarf, five inches shorter than the woman on whom the late Prof. Gibson of Philadelphia twice operated with success by the old Cæsarean section, in 1835 and 1837,[1] and was in labour the same number of hours. The cervix was cut off by the écraseur of Billroth. This woman was also of the same age that Dr. Gibson's patient was at the time of the first operation; was deformed by the same disease; and their conjugata vera were the same in computation.

CASE 22.—Operator, Dr. Gustav Braun, Prof. of Midwifery for Midwives, University of Vienna. The subject was a still smaller dwarf, and nearly the same in height with the patient operated upon with success by Dr. Mills, of Richmond, Virginia, in 1856, the latter being about an inch shorter. Dr. Mills's patient was in labour only 4½ hours; that of Gustav

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[1] This woman is still living.

Braun about 24 hours. The children were saved under both operations. Compare with Case 21. (See table.)

CASES 30, 32, and 34.—Operator, Carl Braun: third, fourth, and fifth cases in the Krankenhaus. The reports have not yet been published in detail. Case 30 appears to have been as long in labour as 22, but the membranes had been ruptured only half an hour. Case 32 perished, although operated upon as early as No. 12. The result was probably one of the misfortunes of utero-abdominal surgery. The height has not been given me as yet, which is an important element in estimating the early or late character of an operation. Ten hours of strong uterine pains are very exhausting to a diminutive rachitic subject, but may be well borne in a woman of the size of Case 12. No. 34 was in labour a less time than the patient of Dr. Porro, and recovered. Why of two cases under the same operator, and with apparently the same advantages, one should die and the other recover, we are not competent to decide. We may speculate as to some minor advantage in the recovered case, either constitutional or hygienic, over the other; but we are still at a loss to tell why one has a peritonitis and the other has not.

We go back in our figures, to examine a series of cases operated upon in the Saint Catharine Lying-in Hospital of Milan, chiefly under Prof. Chiara; with one by his assistant, Dr. Mangiagalli. The Milanese operations number five, with three recoveries, the same number saved, as in 62 cases, in Northern Italy, under the old operation.

CASE 8.—Operator, Dr. Domenico Chiara, Prof. of the Royal Obstetrical School of Milan. The first of the series is the shortest dwarf but two, of all those whose heights I have ascertained, and an inch and a half shorter than the most diminutive subject saved in the United States: but at the same time taller by 7½ inches than the woman (91 ctm.) saved by Dr. Mayer of Brest, France, in 1874, under the old operation.[1] Case 8 appears to have died in consequence of a mishap, the effect of vomiting, the pedicle being forcibly drawn into the abdomen, and a knuckle of bowel forced out. This is said to have given a severe shock to her system, from which she did not rally. Possibly the vomiting may have been the precursor of peritonitis. Prof. Chiara has illustrated his reports of this case, and Nos. 13 and 21, by photographic pictures taken at full length.[2] By the picture of the woman in question, it appears that she was plump, but very crooked both in spine and legs, by which her direct height was very much diminished. She was in good health at the time of the operation, and in her first labour.

In "Santa Caterina" Hospital there is an average of about four hundred obstetric cases a year, there having been six thousand from 1863 to 1878. This region of Italy has frequently been noted by travellers as the most abundant in deformities of any part of Europe: hence the number of Cæsarean operations that have been performed. Milan, Turin, and Pavia have been specially mentioned in books of travel for the number of their rachitic dwarfs. Milan is located in a rice-bearing and malarious district, and the people are subject to autumnal fevers, enlargements of the liver and spleen, pellagra, rickets, and to some extent malacosteon.

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[1] Archiv. de Tocol. Sept. 1874, p. 514.

[2] Annali Universali, 1878.

Case 13.—Operator, Prof. Chiara, and at the same hospital. Subject also rachitic, but younger, taller, and apparently in a fair condition for the operation, which was performed in good season; still she died of peritonitis, while Case 12, in many respects parallel, recovered. Case 13 was pregnant for the third time; her first child was expelled at six months, she having been caused to abort by the use of the hot-water douche; and she aborted spontaneously with the second at three months. In her anxiety to have a living child she declined having labour induced in this her third pregnancy.

Case 21.—Same operator and hospital. This case is of great interest, as the woman recovered. Prof. Chiara has given a front and side view of this patient, showing the peculiar shortening effect of malacosteon on the body, by which the arms and lower extremities are made to appear disproportionately long. This woman was the oldest in the table, pregnant with her seventh child, and in labour about twenty-four hours. Her first four labours were natural and easy; the fourth and fifth after malacosteon existed, but still both were natural; the sixth labour was long and tedious, and required manual assistance to separate the ischia. In the seventh labour, her pelvis had become collapsed and unyielding, with the tuberosities of the ischia only separated by $\frac{22}{32}$ of an inch. The abdominal incision was made $5\frac{1}{2}$ inches in length; the operation lasted 32 minutes; the cervix separated on the eighth day; and the patient left her bed on the thirty-fifth day.

Case 35.—Operator, Prof. Chiara; same hospital; his fourth case. The woman was pregnant with her second child, and advanced seven and a half months when received into the institution. She was then put under medical and dietetic treatment in preparation for the operation, it being estimated that gestation would be completed about August 28. Her first child was delivered in a putrid and softened condition after craniotomy, on March 6, 1878, following which she was attacked with gangrenous vulvo-vaginitis, endometritis, and parametritis. She left the hospital on March 27, 1878, in good health, and re-entered on July 16, 1879. When examined, it was found that "the neck of the uterus was, as it were, abolished, and reduced to a hard resisting knob, in the centre of which a depression represented the inferior end of the cervical canal."

The health of the woman was good at the time of her operation, and this was performed without waiting for the pains of labour. The whole operative process occupied forty minutes. Pulse 108, and respiration 24 at commencement; pulse 50 and respiration 32 immediately after the wire loop was applied and tightened; 72 and 28 respectively, at the close of the dressing. This sudden fall of pulse, which was 100 just before, and increased frequency of respiration, must have been due to the effect of the constriction acting upon the nervous system, in the form of a temporary shock, which soon passed off. The temperature gradually fell with some slight fractional interruptions during the entire operation, from 37.6° Cent. to 36.8° There were no indications of peritonitis during recovery; the pedicle separated on the twelfth day; the patient was up on the twenty-first day, and left the hospital in good health on October 11, forty-four days from the operation. Of four operations prior to the commencement of labour, all resulted fatally but this—see records of 8, 11, and 27. Prof. Chiara saved two out of his four cases.

Case 33.—Operator, Dr. Luigi Mangiagalli; same hospital. Dr. M. is the first assistant to Prof. Chiara, in the Royal School of Obstetrics of Milan. The subject was a young rachitic primipara, in whom one of the chief obstacles to delivery was at the inferior strait, the tuberosities of the ischia being but $1\frac{1}{2}$ inches apart. The true conjugate diameter was nearly three inches long, but much of this was unavailable on account of the form of the strait. Labour commenced a day and a half before the operation, but was no doubt inactive, as the membranes were ruptured but a short time: besides, an active uterine operation of this length will almost invariably lead to a fatal termination after the Cæsarean section in a woman of her diminutive height. Dr. Mangiagalli's operation was completed in twenty-eight minutes. This with the Chiara cases, gives three recoveries from five operations.

The following case requires a special notice, as with it originated the Müller modification; sometimes also called the "Rein and Müller method." Dr. G. Rein, of St. Petersburg, Russia, proposed, in 1877, that the uterus should be ligated to avoid all hemorrhage, before it should be opened for the removal of the fœtus. Müller added to this the turning out of the uterus from the abdominal cavity by a long incision, before the ligature, and then evacuating it, so as to avoid the risk of the entrance of its fluid contents into the abdomen; after which the operation is to be completed, as in the Porro method. The other Müller operations will be found noticed in the records of the cases in which his method was selected.

Case 9.—Operator, Dr. P. Müller, Prof. of Midwifery in the University of Berne, Switzerland. The patient was deformed from malacosteon, and in labour with her sixth child, the pains having lasted three and a half days. She was feverish and exhausted; her child dead; the waters had been draining away for three days; there was gas in the uterus, as shown by the resonance on percussion: and her symptoms were indicative of commencing septic endometritis. The operator had intended to perform the usual Porro operation, but finding an obstacle in the collapsed state of the pelvis, and the want of any neck-like formation in the uterus, he enlarged the abdominal incision, drew out the uterus, secured the cervix, placed sponges as absorbents over the abdominal wound, opened, emptied, and then cut away the uterus. Unfavourable as this case must have been, the woman recovered. Her pulse, which was 136 before the operation, fell to 96, after the removal of the uterus with its septic contents.

By a letter recently received from Prof. Müller, I learn that the superior strait of the woman's pelvis was very much rostrated and collapsed, the pubic arch nearly closed up, and the sacrum and coccyx falciform in curve, so that no instrumental operation through the vagina was possible. The diameters of this form of pelvis do not convey any idea of the working space. They are given as follows: Distance between the iliac spines $8\frac{1}{4}$ inches, between the iliac crests $10\frac{5}{8}$, true conjugate diameter $4\frac{5}{16}$, right oblique 4 inches, and left $4\frac{5}{16}$. The patient was in bed forty-eight days after the operation, and left the hospital two weeks later. She died of heart disease on December 1, 1878, and her pelvis is now in the collection of the hospital.

Case 10.—Operator, Dr. Adolphe Wasseige, Prof. in the University of Liége, Belgium. The notes of Cases 10 and 17 are gleaned from two pamphlets kindly sent me by the operator, giving full details of his two operations and their results. The first patient came under observation in Jan. 1878, when he made an examination to determine the possibility of bringing on her labour prematurely. Finding much deformity of the pelvis, he postponed the delivery to term, and made arrangements to operate upon her in a building outside of the hospital, the old school of Sainte Barbe. Here she was operated on, and here she remained until her cure was complete, the carbolic spray being used in the operation, the method of Lister fully carried out, and pelvic drainage established by a tube through the vagina and Douglas's cul-de-sac. In forty days the woman was discharged, and a month later was reported as nursing her child at home in Verviers.

CASE 17.—His second operation was performed under much less favourable circumstances, and in the hospital proper, upon a dreadfully deformed dwarf, as shown by the picture given of her. She entered the hospital a few hours before the commencement of labour, and was operated upon at an earlier stage than in the preceding case, but her condition of health, and an accident of the operation by which she lost a good deal of blood, caused her case to terminate differently. As a child, she commenced to walk at eight months, and ceased to be able to do so at eight years, from which time until she was fifteen or sixteen she was obliged to recline or sit up. She did not menstruate until eighteen years old. I have given her conjugate diameter as an inch, but the condition of pelvic collapse will be better appreciated when I state that the sacro-cotyloid measurement on either side was but $\frac{1}{16}$ of an inch ($1\frac{3}{4}$ ctm.). Her pulse before the operation was 102, and temperature 102.2°. The plan of Müller was attempted, but the uterus could not be turned out of the abdomen through the incision, and the ordinary Porro operation was performed. A chain écraseur was applied to constrict the cervix, but the tissues being friable an artery was opened, and before it could be secured there was a serious loss of blood. The serrenœud of Cintrat was applied, and the operation concluded in forty-one minutes. Patient much blanched by the hemorrhage, and pulse 144 and very feeble. She died, as was much feared, before the operation.

Dr. Wasseige attributes the condition of her cervical tissues to the fact of the patient being very badly housed and fed during her period of gestation. To obviate the risk of cutting into the cervix by the constrictor, he has devised one which is described and illustrated in his second pamphlet, in which the compression is made with a band, instead of a round wire or large chain, as in most of the reported operations. Dr. Wasseige appears to have fallen into the same error with Dr. Welponer, already referred to, to the effect that the case of Dr. Storer was not of the Porro order. He says, "we exclude from the statistics the case of Stover [Storer] because the extirpation of the uterus was done with another object." If our European medical brethren will examine the original report by Dr. Bixby, they will find that the parturient state of the woman much more immediately endangered her life, and required the Cæsarean section, than the double tumour, or tumours which constituted the dystocial obstacle.

We now come to the examination of another series of cases. When Dr. Chiara performed his first operation in Milan, Dr. Tibone, of Turin, was present, and now, after an interval of five months, the latter tries the same method at home, on one of the diminutive dwarfs of Northern Italy.

Case 14.—Operator, Dr. Domenico Tibone, Prof. of Midwifery and Clinical Obstetrics in the University of Turin. This patient entered the Maternita di Torino, six weeks before the operation, and fell in labour at eight months, when it was decided to open the abdomen by the long incision. This was made to the extent of 19 ctm. (7½ inches), the membranes punctured per vaginam, the liquor amnii drained off, the uterus turned out, as devised by Müller, and the cervix ligated by the constrictor of Maisonneuve.

Although comparatively an early operation, I cannot consider twelve hours a safe measure of time in so small a dwarf. If such subjects are to be saved, they must be operated upon as in the case of the dwarf at Brest, a woman who, although but 35$\frac{13}{16}$ inches in height, was saved with her child by a very early Cæsarean section. The strength of rachitic dwarfs is usually very soon exhausted, and a condition of physical prostration seems to favour the production of peritonitis. As in the old operation, so it will be found in the new, that recovery will follow in larger measure the early use of the knife.

The recovery in Müller's case is one of the marvels of obstetric surgery, and it is not likely to be duplicated in antecedents and results. The issue in Cæsarean cases is largely dependent upon the condition before the operation, and the care in, and manner of, performing it; but there are instances which at times defy all prognostic rules, very unfavourable cases getting well, and their opposites perishing. Still, there are general rules to guide us, and we find an average mortality in cases which are classed in anticipation as *favourable.* We should see to it, wherever possible, that this word shall cover time of operating as well as condition of woman.

Case 23.—Operator, the same, and in the same hospital. This rachitic subject was the shortest, by a fraction, among the women who recovered after the Porro operation (No. 16 measuring nearly the same), and the same in height as Dr. Tibone's first case, No. 14, which he lost. This woman suffered with rickets until eight or ten years of age. She was in labour when she entered the hospital, but how long exactly I am not able to state; her pulse was 104, and that of the fœtus 152, which were neither of them favourable to success. In the convalescence, the patient passed through an attack of traumatic peritonitis. The sutures were removed on the fifth day, but there being considerable meteorism, and the intestines threatening to protrude, metallic sutures were applied on the sixth day. In passing the wires, the intestines, which pressed with force into the abdominal wound, were unfortunately transfixed in several places, resulting in the formation of three intestinal fistulæ, which retarded the entire healing of the wound, and she was sent for treatment to the San Giovanni Hospital.

Case 27.—Same operator and hospital. This was the tallest of Dr. Tibone's cases; a primipara of 39, said to have been in good health at the time of the operation, and was not yet in labour when it was begun. She was of regular form except as to her pelvis, which had the usual rachitic character; and her whole skeleton was imperfectly developed. Traumatic peritonitis resulted, and death quickly followed.

CASE 28.—Operator, Dr. Giovanni Peyretti. This being also a Turin case, is placed in the same series with the preceding cases. The woman was the smallest but one, of all the European Porro subjects whose heights are recorded, and was thought to be in a favourable condition at the time the section was commenced. The abdominal incision was $5\frac{1}{8}$ inches in length. There was no escape of fluid into the abdominal cavity. The constrictor of Cintrat was used; the abdomen was sutured with carbolized catgut, and the dressing of Lister applied, after perchloride of iron had been used upon the pedicle. Vomiting, some fever, slight hemorrhage from the pedicle, and tympanites occurred during the first week. On the eighth day she was slightly delirious, and got up to urinate. Ninth day symptoms of tetanus appeared, going on to opisthotonos. Tenth day died. Wound partially united, no signs of peritonitis.

CASE 31.—Operator, Dr. Giuseppe Berruti, Assistant Lecturer on Obstetrics, Turin. The woman was a primipara, and one of the few in Europe that have been operated upon in private practice. Her pelvis was of an osteomalacic type, and part of the superior strait was shut up. The abdominal incision was only $4\frac{3}{4}$ inches (12 ctm.) long. After removing the fœtus, the neck of the uterus was tied at its point of union with the body, by a strong silk ligature tightly drawn, and the uterus cut away. This not sufficiently controlling the vessels, a Kœberle constrictor was applied. The operation was performed as in Case 28, and also in thirty-five minutes. During a day and a half there were no unfavourable symptoms, then traumatic peritonitis set in, and continued for two days, when it began to subside. The pedicle separated on the eighth day, and the patient, with her abdomen well bandaged, sat up on the fifteenth day.

Milan and Turin have each had five Porro cases; the former saving three, and the latter two, being collectively fifty per cent., which is the average for the whole of the European cases. The Maternita of Turin has an average of 271 obstetric cases per annum; the whole, from 1863 to 1878, having been 4066. In these fifteen years there were only three Cæsarean operations, the last by the Porro method, and all were fatal. Dr. Tibone says that, thanks to improved hygienic conditions both as to streets and houses, rickets has become less frequent during the last twenty-five years in Turin, and is less deforming in results than formerly; and that obstetric cases among rachitic subjects have generally been managed in private. Hemorrhage and peritonitis have been the usual causes of death after Cæsarean operations in this section of Italy. Of the three cases in the fifteen years noted above, one died of hemorrhage, one of exhaustion, and one of peritonitis. There was one operation by laparotomy after rupture of the uterus, but the woman died.

CASE 11.—Operator, Dr. Fernando Franzolini, Surgeon-in-Chief of the Civil Hospital of Udine, Italy. This is another of the cases which were operated upon before labour began. The woman was in the hospital eleven days prior to the operation, and in a condition bordering on death at the time of its performance, being affected with broncho-tracheal catarrh. It became a question whether to operate at once, and save the life of *the fœtus*, or to wait until after death, and then open the abdomen and uterus, with scarcely a shadow of hope for *its* safety, under the manner of death. It was decided, therefore, to operate during life, the patient being unconscious from her partially asphyxiated condition. Artificial labour had been attempted, but failed after a few slight pains; the hot-water douche, hypodermic injection of ergotine, and rupture of the amniotic sac, being all employed. Unfortunately there were twins in utero, each having its own distinct placenta; and one of these was implanted over the line of incision. This latter was the occasion of a serious loss of blood, which was checked by placing an Esmarch elastic tube twice around the cervix. The operation had an effect to somewhat improve the state of the patient; but an advance in her pulmonary complication occasioned her death. The twins were living, but were not in a condition for independent existence, having suffered from the blood-poisoning of their mother, in consequence of which they died within an hour.

Case 15.—Operator, Dr. C. C. Th. Litzmann, Prof. of Obstetrics and Gynæcology in the University of Kiel, Germany. This case is one of peculiar interest, and may prove a valuable lesson to future operators. A short time before, Prof. Litzmann, who is a colleague of Esmarch, tried the bloodless operation of the latter in a Cæsarean operation (old style), and failed to save the patient. He then in the case under consideration adopted the new method, as modified by Müller, but with no better success. The woman was pregnant with her second child, the first having been delivered by craniotomy, and had been in labour three days. She not only had a contracted pelvis, but an occlusion of the external os uteri, probably the result of the former delivery. The operation of Litzmann was effected without hemorrhage, but lasted two hours. The fœtus was apparently dead when removed, but soon revived, which is a common feature of the Müller plan of delivery; the arrested maternal supply of blood, depriving that of the fœtus in the placenta of its oxygen, and producing during a few moments the effect of drowning.

After the death of the mother it was discovered that an error had been committed in not opening the os uteri, as the cervix having no vent, there accumulated in the canal a quantity of putrid pus, to the pressure of which the operator attributed the blood-poisoning.

Case 16.—Operator, Dr. August Breisky, Prof. of Midwifery in the University of Prague, Austria. The woman was brought to the hospital in labour, and the operation was performed according to the plan of Müller, the incision extending from above the umbilicus down to about 1½ inches above the pubes. This was the third case in which the Müller plan was tried, and the first to save both mother and child. The Lister plan was adopted for treatment. Three drainage tubes were inserted, one through the vagina and Douglas's cul-de-sac, and two through the abdominal wound to the iliac fossæ. At the close of the operation the pulse soon fell to 84, and the woman made a good recovery. The cervix remained open, forming a fistula for forty days. The antecedents of the case have not been reported. Discharged in fifty-two days.

Case 18.—Operator, Dr. Perolio, of Brescia, Italy. This dwarf was more deformed in pelvis than the conjugate diameter indicates, the sides of the superior strait being bent inward, constituting the form denominated *pseudo-osteomalacic*. The membranes gave way before there were any actual labour-pains. The instrument of Cintrat, and abdominal drainage, were used, and the patient was well in twenty-seven days.

Case 19.—Operator, Dr. Hubert Riedinger, of Brünn, Austria. Woman entered the Lying-in Hospital five days before the operation. Labour set in very actively, and she was operated on in fair season, under the antiseptic spray, and with the écraseur of Péan-Billroth. Traumatic peritonitis, resulting in abscess, followed; but the woman, after being in great danger, recovered in five months (Feb. 16).

CASE 20.—Operator, Dr. H. Fehling, of Stuttgart, Germany. The patient was a primipara, and entered the Lying-in Hospital early in the previous month. This was another instance where the pelvis, deformed by rickets, was of the malacosteon type, and nearly closed at the superior strait, the right sacro-cotyloid diameter measuring but one inch. In operating, the Esmarch band was first applied, and, after the excision, the serrenœud of Cintrat. The tissues of the cervix being weak, the pedicle tore as in Case 17, under Dr. Wasseige, and the clamp of Spencer Wells was substituted. Peritonitis (regarded as infectious) caused death on the fifth day.

CASE 24.—Operator, Dr. A. Fochier (Surgeon-in-Chief of La Charité Hospital), of Lyons, France. This is the fourth malacostean case that recovered after the Porro operation. Dr. Fochier had her under treatment in the lying-in department of La Charité for two months prior to labour, and even then her case was not regarded as very favourable. It was her first labour, a very unusual circumstance in malacosteon cases, as the deformity resulting from this disease to an extent requiring the Cæsarean section is generally found in multiparæ, and yet in this instance the pelvis, as shown by the sacro-cotyloid diameters, was in a full state of collapse. The usual impression in our country, where we have no personal experience with the disease, has been that it originated during gestation, or between pregnancies, and increased with the progressive acts of child-bearing; but here we have an advanced case with a first pregnancy. Malacosteon may also attack women already deformed by rickets, and in them the disease advances rapidly, and its results are frightfully disfiguring.

The time of Dr. Fochier's operation was only twenty-five minutes—an unusually short one for the Porro operation. The old Cæsarean section has been accomplished in five minutes; but the method of Porro has usually required from thirty-five minutes to an hour, and that of Rein and Müller about twice as long. The cicatrix, under the old operation, as a general rule, forms much earlier. In Dr. Fochier's case it was complete in thirty-five days.

CASE 25.—Operator, Dr. Paolo Coggi, of Cremona, Italy, Physician to the Lying-in Department of the Civil Hospital, where the case was under treatment. As the record has not been published, I will give it as contained in the letter of the operator.

The subject was a rachitic dwarf, as will be seen by the table; and in labour for the first time. Her pelvis appears to have been of the infantile type, or that which is known as the "generally contracted" variety, as in Case 15. The operation was performed during the first regular pains of labour, the woman being in a very favourable condition. There was no accident during the operation; which occupied a comparatively short time. Not a drop of amniotic fluid or blood escaped into the abdominal cavity, and there was, therefore, no need of peritoneal cleansing. Drainage was not made use of; constriction by the serrenœud of Cintrat, the long and heavy handle of which was fixed to the left hip; and the method of Lister was fully carried out.

The fœtus was well formed, alive, weighed about $7\frac{1}{2}$ pounds; occipito-mental diameter $5\frac{5}{16}$ inches; bi-parietal, $4\frac{1}{8}$ inches.

No unfavourable symptom after operation; pulse 76, respiration 22, temperature 98.6. The same condition continued for four days. On the fifth day there were evidences of localized peritonitis around the pedicle; this began to extend, and caused the death of the woman on the ninth day. The abdominal wound was $5\frac{1}{2}$ inches in length, and united by the first intention.

The stump or pedicle had formed no adhesions, and was in part retracted within the abdominal cavity, a portion at the inferior angle of the wound being retained by a fragment of uterine tissue held in the handle of the serrenœud.

"The result of the autopsy has convinced me that the lamentable disaster was occasioned immediately by the re-entrance into the abdomen of a portion of the stump through the failure of union with the parietes, and that this was interfered with by the involuntary movements, produced by the serrenœud. I am persuaded that this inconvenience could be avoided by the use of a small light serrenœud, with a movable handle like that of Kœberle, and a strong needle applied below the metallic handle to include the abdominal parietes. Given the excellent condition of my patient, instead of a discomfiture we should have recorded a victory."

Dr. Coggi appears to have experienced an unusual difficulty with the pedicle, which being partly freed from the constrictor and drawn in, must have discharged a portion of pus internally, thus lighting up the peritonitis which proved fatal.

CASE 26.—Operator, Dr. S. Tarnier, Surgeon-in-Chief to La Maternité, Paris. The subject was a primipara, having a fibrous tumour filling the pelvis, and was operated upon by Prof. Tarnier, at Neuilly, in a maison de santé, after a protracted labour, and when apparently poisoned by a putrid fœtus, evolving gas in utero. Labour began on Feb. 17, and the membranes soon ruptured; some slight action in the uterus, but soon ceased. Same repeated for the three following days. The fœtal heart-sounds disappeared on the 21st; slight chills, vomiting, escape of fetid liquid on 22d and 23d; pulse 120, when operation was performed. The plan of Müller was adopted; uterus in a state of commencing decomposition; fœtus putrid; tumour immovable. Died of septic poisoning. Case very much resembles that of Prof. Storer, in 1869.

CASE 29.—Same operator, but in the Maternité Hospital of Paris. Labour also protracted, and in a primipara. Woman had pains on the 15th and 17th; membranes ruptured on 18th; pains violent in the back on the 19th; entered the hospital on the 20th. No fœtal pulsations on arrival. Porro method selected; incision about $6\frac{1}{4}$ inches; putrid fœtus removed. Wound cicatrized in three months, but up and about seven weeks before this. The woman recovered, notwithstanding the length of her labour, and her unfavourable condition before the operation. This was the first Cæsarean operation in Paris, which did not end fatally, for more than ninety years, during which period over fifty operations were performed.

CASE 36.—Operator, Dr. J. Lucas-Championniére, at the same hospital. Woman rachitic; was taken with the disease in infancy, and did not walk, except for a short period, until she was six. Was of a marked rachitic appearance, but in good health, and entered the hospital three weeks before her labour. Pains began on Nov. 19, and she was operated upon on the same day, under the spray, and Lister's dressing. The operation occupied forty-five minutes in performance. Scarcely any fever resulted, and the pedicle fell on Dec. 2.

I was under the impression until quite recently, from a statement made abroad, that in one instance the cervix uteri had been ligated and dropped into the abdominal cavity; but a careful examination of the reports shows that, in all the cases, the plan of securing the cervix in the abdominal wound was adopted.

Of the Müller operations, two recovered and three died, one of the latter being very unfavourable. Spencer Wells believes, from his extensive experience in ovariotomy, that the risk of peritonitis increases with the length of the abdominal wound, and that incisions above the umbilicus are more likely to excite it than below. This would make the Müller method one of greater risk than the Porro. If the fluid contents of the uterus are drained off, the organ may be made to pass through a comparatively small incision, as in Case 14, where it was 7½ inches long.

General Summary.—As far as I have been enabled to ascertain, with any degree of certainty, there have been 41 Porro operations in Europe. I have given but 36 of these in the arranged table, for the reason that the other five have not yet been published, and the reports which we have of them are of but little value in their present incompleteness.

Dr. Previtali, of Bergamo, who performed the fourth Porro operation in order of time, has recently stated[1] that he had since it performed the same twice, making for him three cases; one on December 30, 1878, and the other on May 3, 1879. The results of the second and third I have not yet ascertained. I had hoped to have heard from him this month (January), but have not. As these operations are entirely unknown to Prof. Chiara, of Milan,[2] I presume they have not been successful. His first case was published by Dr. Perolio, of Brescia, two years after he operated.

Two operations have been claimed for the city of Moscow, one for Prof. Oscar Prevôt, a corresponding member of the London Obstetrical Society; "woman saved;" the name of the other operator I have not ascertained, his patient is reported to have died.

Two additional operations are claimed by Dr. J. Lucas-Championniére, of Paris, making him the performer of three, with two recoveries.

Prof. Valtorta, of Venice, has recently operated in the Lying-in-Hospital, of which he is the director. The child lived, but the fate of the woman has not yet been ascertained.

The multiple operators (these claims being correct) are, therefore, Carl

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[1] On the authority of Dr. Pinard, of Paris.

[2] As shown by a letter recently received in answer to one of inquiry concerning the cases in question.

Braun, 5; Chiara, 4; Previtali, 3 (1?); Tibone, 3; Championniére, 3; Spaeth, 2; Wasseige, 2; and Tarnier, 2; making 24. Of the 22 cases in which the results are recorded, 11 were successful.

Italy still claims the largest number of operations, 19 (17?); Austria has had 10; France, 6; Germany, 3; Belgium, 2; Russia, 2;[1] and Switzerland, 1; equalling 43.

The 36 cases in the table being arranged strictly in order of date, it will be seen that, of the first 18, 7 were saved; and of the second 18, 11 recovered. This improvement is only partly due to increase of skill. In the first 18, there were 9 subjects whose condition was unfavourable at the time of operation, and of these but 1 recovered. The other 9 were regarded as favourable, and of them, 6 recovered and 3 died. Five of the 9 unfavourable cases were in conditions which made their operations almost necessarily hopeless. Of the second 18, 14 were classed as favourable, of which 8 recovered, and 6 died; 3 were regarded as "not very favourable," but all recovered; 1 was very unfavourable, and died; and 1 died whose condition at the time of the operation is not stated.

The length of labour before the operation has had an influence over the result, but not nearly so marked, as is shown by my statistics, in the old Cæsarean operation in the United States. Where the women were actually in labour, and were operated upon by the Porro method at a period not later than 12 hours from its commencement, there were 7 saved out of 12. Where in labour from 2 hours up to 24 (including the twelve-hour enumeration just given), there were 13 saved out of 24. Where labour lasted from 36 hours to 7 days, the condition was such that 5 out of 8 died.

If we exclude the 6 who evidently died in consequence of diseased conditions existing prior to the operation, we have 30 cases whose fate rested upon the effect of the knife and the skill in the after-treatment, without any special reference to the length of labour; and of these, 18, or 60 per cent., recovered. This is the proper way to measure the absolute mortality of the operation in coming to a decision as to its relative merits when contrasted with craniotomy and cephalotripsy. If women are to be operated upon in a semi-moribund state, in order that their children may be saved alive, it is not exactly fair to set down their cases as evidence of the danger of the operation. Examined in all its details, in different countries, and under different circumstances, I have formed the opinion that the Porro Cæsarean operation, performed under the carbolic spray, and followed by proper drainage and the Lister treatment, will be found successful to the woman in about one-half of all the cases of pelvic deformity requiring its performance that are brought for relief to lying-in hospitals. What it will accomplish in private practice, or in the United

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[1] These cases have been called in question, but, as far as I have been able to ascertain, they are authentic.

States, where but one Cæsarean case in twenty-eight has been in hospital, I am not prepared to say.

The result to the children. As long delay endangers the life of the child, so the reverse results in its being delivered alive. In no one of the Porro operations was craniotomy attempted, to the destruction of the fœtus; hence the remarkable number saved. Of the 37 children, 33 were removed alive, from 32 women; and 4 were found dead. How long the 33 survived we are not informed; in the case of the twins, I learned from Dr. Franzolini that they did not live an hour. In the 4 cases in which the fœtus was found dead, labour had existed, respectively, 5 days (in 2), 3½ days, and 7 days. This is in very decided contrast with the result of the old operation in the United States. Under the last 36 operations, 17 children were removed living, and 19 dead. The next preceding 36, 16 living, against 20 dead; and the 36 prior to that, 18 each. Under all the Cæsarean operations of our country, there have been found 55 children dead, to 45 living, when the uterus was opened. This general result is quite as decidedly in contrast with that which has attended the *timely operations* in the United States, in which the proportion of children found dead, to those removed alive, has been as one to eight. *Delay* and *experimental craniotomy*, with, in a few instances, *version*, have been the causes of the great majority of the deaths in our Cæsarean record, both to mothers and children; remotely it may be to the first, but directly to the second.

Compared with the 36 Porro operations recorded in my arranged table, the last 36 Cæsarean operations of all classes in the United States make but a sad show, with their 7 recoveries, and 29 deaths, in 12 years. Even Great Britain, with her far greater mortality in the whole average, as compared with us, saved 11 women out of her last 36 cases; and 23 children were delivered alive, against our 17.

There has been, of latter years, in our country, a very decided falling off in the management, and consequent saving, of cases of extreme pelvic deformity. I have fully accounted for this in a former paper,[1] and only refer to it now in connection with the practical application of the present article to our own unfortunate case. There are several alternatives that present themselves to us for consideration and future advantage, viz.: 1. Shall we endeavour to secure, by the dissemination of knowledge, an early Cæsarean operation in all cases where delivery *per vias naturales* is impossible, or is highly dangerous to life, so as to obtain for the women the great advantages of a timely delivery in saving their and their children's lives? 2. Failing to do this, shall we adopt the Porro modification, and thus in a measure obviate the effect of delay upon the uterine tissues, by removing the organ, and substituting for a dangerous intra-abdominal wound, with its disposition to gap, an external and visible one?

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[1] Am. Journ. Med. Sci., January, 1879.

3. For the better management of deformed women, who are in almost every instance poor, would it not be advisable, in case of the adoption of the Porro method, to have them treated in hospital, especially in all of our cities? And, 4. Is there any hope that the Porro method, if introduced, will have the effect to secure the subject against the present dangers of long delay, and experimental expedients with instruments, resulting in failure and fœtal death?

It is very clear to my mind, from an examination of our past record, that there would be little for us to gain by the Porro method in private practice, if we could induce all the midwives and accoucheurs having cases of deformity to call in at once a competent operator, that the Cæsarean section, if requisite, might be performed before the child dies or is sacrificed, and the case rendered more dangerous by prolonged uterine action than it is proved to be in the first few hours of labour. But we cannot do this, with the amount of ignorance that is generally at the bottom of the bad management of these desperate cases of dystocia, in their early hours, or it may be days.

From the results of numerous experiments on the lower animals, it is apparent that the Porro method, *per se*, is less dangerous than the old Cæsarean section. This being the fact, we ought to have quite as good success with the new plan here as they have had abroad, provided we can secure in the private houses of the poor as good care and management as they have had in their hospitals. Our subjects, although poor, are generally much better clothed and fed than those of the old world; and the results of early Cæsarean operations upon them have been generally much less mortal than we find to have been the case according to European statistical records. We have, therefore, much to expect from the Porro operation in our large cities, and under skilful management, certainly so, when compared with the results of the last twelve years under the old system.

The main objection to the Porro method is that it entirely unsexes the woman, not only rendering her barren, but in some degree unfeminine. To this it may be answered, that rachitic subjects requiring the Cæsarean section for delivery would be in a much safer position for the future if rendered incapable of any longer begetting children. True, we could have no more Reybold cases, with two children and six grandchildren; but this is seldom possible, and, considering the fearful risk, by no means desirable. Women have certainly had the Cæsarean operation performed upon them as many as four times with success, and claims have been made of six and seven times, but they have not been satisfactorily established. The question of future risk will lie between the physicians and the woman to be operated upon. In the old world a very large proportion of the subjects of the Porro operation, especially of the rachitic dwarfs, have been unmarried; those affected with malacosteon having been generally married multiparæ. In our country, the white Cæsarean subjects have been in large proportion married women; of the blacks, who were chiefly slaves, I cannot speak definitely, as but little account was taken of their social state, their cases being usually headed by their first name. In all probability, as they were mostly young and rachitic, they were unmarried as a general rule. In the future, we shall have chiefly to deal with the cases of white women, the Cæsarean cases among the blacks having greatly declined since the establishment of their freedom, not that the occasions for the operation do not exist, but that it is seldom performed when required. This will be seen by the following comparison. Of the last 36 operations, beginning with 1861, 26 were performed upon white subjects, and 10 on blacks. Of 36 immediately prior to 1861, 21 were blacks, and 15 whites. Notwithstanding this change and the war, the singular fact presents itself that there has been a steady increase in the whole number of operations during the last three decades, viz., from 1850 to 1860, 24 operations; 1860 to 1870, 29; 1870 to 1880, 28. In the first of these decades there were 16 blacks to 8 whites; in the second, 15 blacks to 14 whites; and in the third, 5 blacks to 23 whites. The whole number of the third decade (28) as given will probably be increased by one or two cases when all are received. We may say, then, with some degree of certainty, that there are three Cæsarean operations, on an average, performed in the United States every year. In the last decade there have been also six subjects on whom the operation of laparo-elytrotomy was performed in preference to the Cæsarean section; these were all white. We have then to provide for the delivery of thirty or more women between this and 1890, by either the old Cæsarean section, the Porro modification, or the substitute in laparo-elytrotomy. Under the present system of delay, we save one case in five; under early operations, we might save three out of four or five; under the Porro method, we may save one-half or more, and under laparo-elytrotomy, there have been saved four out of six in New York.

I do not believe that the number of Cæsarean operations in any country nearly represents the whole number of cases in which the use of the knife is an absolute necessity. Many women die undelivered for want of proper assistance, and some are not operated upon, because of the general belief that death will follow, even if they are thus delivered. What is requisite is a mode of operation which shall offer a fair hope of recovery, and which, in consequence, can be urged upon the patient when she begins to realize the fact that she must die in labour if not relieved. The physician must have faith in the method proposed, and be able to recommend it from its past successes. In countries where the Porro system has been adopted, it has had the effect to increase the confidence of the operator, to secure a larger proportion of early operations, and to save alive nearly all of the children. These are important considerations in view of the question to be shortly answered: *Shall we adopt the Porro method of operating in the United States?*

What becomes of the pedicle? Theoretically the forcing of the cervix uteri from its natural position, and dragging it with the vagina to form an attachment to the abdominal wall above the symphysis pubis, would appear to be a very serious objection to the plan of procedure that has been universally adopted; but, practically, the objection is found to have but a moderate degree of realization, as the parts usually adapt themselves to their new relations. It must be borne in mind that where the collapse of the pubis is such as to require the operation, the uterus is unusually high up, with the os either above the pubes or carried back toward the spine. The bladder is also higher than normal, the urethra elongated, and the symphysis pubis shorter; the pelvis is also generally carried backward, so that the lowest part of the abdominal wall in the unimpregnated woman is brought somewhat nearer to the plane of the superior strait; all of which favour the new relations produced by the cervico-abdominal union. After a time, as Dr. Porro found in his case, the attachment is converted into a long, thin pedicle, and the woman may, as his patient was able to do, walk, jump, or dance, without inconvenience or the sense of pain.

It is not uncommon after the old operation, in the case of a second, to find the uterus adherent to the abdomen as the effect of a local traumatic peritonitis. This is the case with Mrs. Reybold of this city, and she has been always conscious of some unusual cause of tenderness in the region of the cicatrix ever since her first operation in 1835. The entire removal of the organ, by reason of the diminished weight, and the subsequent elongation and thinning of the pedicle, promise to give less inconvenience than she even now experiences in the form of tenderness to the touch.

Those read in ovariotomy will remember that cases are upon record where owing to the shortness of the pedicle the clamp has been so applied as to open the corresponding cornu of the uterus after the fall of the included portion, leaving a utero-abdominal fistula recognizable at the next menstrual period. Ordinarily, the pedicle elongates, and women after the operation may bear children without any serious difficulty. In some very rare instances, a short pedicle may prove a serious inconvenience in gestation, and a source of danger in parturition. Although this is the case, it constitutes no objection to the plan of treating the cut cervix as an external wound, by incorporating it with the lower commissure of the abdominal incision.

Several plans, all of which in my estimation tend to complicate the case and increase its dangers, have been proposed, by which this union is to be avoided, viz.:—

1. To securely ligate the cervix, and drop it into the pelvic cavity, trusting to drainage to remove any discharge that may form.

2. To invert the uterus after its evacuation and constrict and remove it by the vagina.

3. To open the vagina close to the cervix, and bring the ligated stump into the passage.

The first is believed to be much more dangerous for various reasons than the external treatment of the stump. The second could only be done after a full dilatation of the cervix, and not at the early period when it is the most safe to operate. If the cervix was first ligated, it is possible that it might be turned and the wire-loop applied through the vagina higher up, and the first constricted part cut away. This would require that there should be a long and relaxed cervix, for it must be recollected that in inversio uteri after delivery, the whole neck is very rarely everted. We must also bear in mind, that suppuration within the vagina is not nearly so safe as it is external to the abdomen, where purulent absorption is much less likely to occur, and especially under the dressing of Lister. The third plan has the additional danger of hemorrhage from opening the vagina. Paquelin's knife might be used, but all these complications of the original method only add to the danger.

The great improvement in the Porro method I conceive to lie in two points, viz.: 1. The wound originally within the abdomen is treated virtually without the body, where it can be observed and dressed to the best advantage. 2. There is no bleeding or gaping uterine wound; no lochial discharge; no escape of fluids into the abdominal cavity from the uterus; and no uterine sinuses to absorb noxious matters, set up phlebitis, or metritis. These are certainly great advantages, and only to be fully attained by the abdominal ablation of Porro entirely carried out.

Date.	Name of operator.	Locality.	Hospital, or private patient.	Age.	Cause of difficulty.	Result to woman.	Result to child.	Height of woman.	Conjugate diam.
May 21, 1876	Prof. Edoardo Porro.	Pavia, Italy.	Hospital.	25	Rickets.	Recovered.	Living.	4 ft. 10½ in.	1$\frac{9}{16}$ in.
Jan. 3, 1877	Prof. Giovanni Inzani.	23 miles fr'm Parma, Italy.	Private house.	32	Encephal'd tumour of pelvis.	Died.	"	....	....
Mar. 28, "	Prof. Alfred Hegar.	Freibourg, Germany.	Hospital.	32	Kyphoscoliosis.	"	"	4 ft. 2½ in.	32 "
April 25, "	Dr. Geronimo Previtali.	Bergamo, Italy.	"	?	?	"	Dead.	?	?
June 22, "	Prof. J. Spaeth	Vienna.	"	40	Malacosteon.	Recovered.	Living.	?	?
Sept. 3, "	Prof. J. Spaeth	Vienna.	"	29	"	Died.	"	4 " 7⅛ "	3⅛ "
Sept. 5, "	Prof. Carl Braun.	Vienna.	"	40	"	"	"	4 " 8½ "	R. sac.-cot. 1⅝ L. 3½
Dec. 16, "	Prof. Domenico Chiara.	Milan, Italy.	"	37	Rickets.	"	"	3 " 7½ "	R. sac.-cot. 1¾ L. 1⅝
Feb. 4, 1878	Prof. P. Müller.	Berne, Switz.	"	37	Malacosteon.	Recovered.	Dead.	4 " 11 "	4¼ in. rostrate
April 14, "	Prof. Adolphe Wasseige.	Liége, Belgium.	École de Ste. Barbe.	39	Rickets.	"	Living.	4 " 1¼ "	2 in.

When the accompanying table had advanced to the thirty-fifth case inclusive, I found Dr. Pinard's set of abstracts, and a tabular record, in his Porro article, contained in the *Annales de Gynecologie* for Dec. 1879. This is the first and only attempt that I have seen to arrange the cases in the order of their occurrence, and to give the results to both child and mother. The table is defective in that it gives too little on which the reader may found an opinion; but this is in a measure compensated for in the abstracts of cases. I was glad to find in looking over his list that I had every case that was reliable, except my thirty-sixth, which he had just received by private communication, and that I had in addition Cases 32 and 34, which he had not discovered.

In a third paper, Dr. Pinard, through Dr. Chiara, of Milan, corrects one of his errors in ascribing a case to Dr. Maternita, of Turin. This record first appeared in an Italian paper by Berruti, which abounds in errors, as "*Maternita; Torino, one case, died,*" and in some way became Dr. Maternita in the transcription. As he had all the cases from the said hospital, the error added one to his list of deaths, which had had no existence. I find it absolutely essential to correctness to make my own searches instead of intrusting the work to students.

Those who have seen the Pinard table will have noticed that it contains also two Russian cases, credited to Drs. Prevost and X——, of Moscow, with one death and one recovery, which I have also left out, as the other particulars are all wanting, and the result would not be changed if this statement made last summer by a Russian medical visitor in Paris should

No.	Time in labour before operation.	Cause of death in woman.	Condition of woman at time of operation.	Special notes.	References.
1	6 hours 51 min.	R.	Favourable.	Was 24 days under care in hospital before operation.	Annali Universali di M e Chirurg., Milan, 1 p. 289.
2	?	Peritonitis.	Exhausted by disease.	Died on the 4th day.	Case not published.
3	4 days.	Septic peritonitis.	Nephritis and eclampsia	....	Centralblatt für Gynæk 1879, No. 11, Dorff.
4	5 days.	Exhaustion in 30 hours.	Exhausted by long labour.	Brought to hospital in an almost dying condition.	Perolio (Pamphlet), B cia, 1879.
5	2 or 3 hours.	R.	Favourable.	Tenth pregnancy; 24 days under preparation.	Wiener Med. Wochenschrift, 1878.
6	About 36 hours.	Septicæmia 8th day.	Symptoms of septic poisoning.	....	Wiener Med. Wochenschrift, 1878.
7	15 hours	Septic peritonitis.	Exhausted by malacosteon.	8th labour; died on the 5th day.	Lo Sperimentale, Fiore 1879. Welponer.
8	Labour not commenced.	Shock from drawing in of pedicle and protrusion of bowel.	Favourable.	Pedicle torn loose by vomiting.	Annali Universali, 1878 394.
9	3½ days.	R.	Fever and indications of septic endometritis; gas in utero.	6th pregnancy; Müller's modification.	Centralblatt für Gynæk March 2, 1878, No. 5.
10	18 hours.	R.	Favourable.	Pulse 94 after operation.	Ann. Soc. Med. Chirurg Liège, 1879, xviii. 17

No.	Date.	Name of operator.	Locality.	Hospital, or private patient.	Age.	Cause of difficulty.	Result to woman.	Result to child.	Height of woman.	Conjugate diam.
11	April 22, 1877	Dr. Fernando Franzolini.	Udine, Italy.	Civil hospital.	35	Anasarca and dyspnœa.	Died.	Twins, alive, but died within an hour	....	....
12	May 10, "	Prof. Carl Braun.	Vienna, Austria.	Hospital.	26	Rickets.	Recovered.	Living.	4 ft. 1⅜ in.	2 in.
13	May 22, "	Prof. Domenico Chiara.	Milan, Italy.	"	23	"	Died.	"	4 " 3$\frac{3}{16}$ "	2⅜ "
14	May 27, "	Prof. Domenico Tibone.	Turin, Italy.	"	27	"	"	"	3 " 8⅛ "	2¼ "
15	June 14, "	Prof. C. C. Th. Litzmann.	Kiel, Germany.	"	29	Generally contracted pelvis.	"	"	4 " 6⅜ "	3⅛ "
16	July 9, "	Prof. August Breisky.	Prague, Austria.	"	32	Rickets.	Recovered.	"	4 " 8⅜ "	2½ "
17	Aug. 3, "	Prof. Adolphe Wasseige.	Liege, Belgium.	"	21	"	Died.	"	3 " 3⅜ "	1 "
18	Aug. 23, "	Dr. Perolio.	Brescia, Italy.	"	25	"	Recovered.	"	3 " 10⅞ "	2½ "
19	Sept. 16, "	Dr. Hubert Riedinger.	Brüun, Austria.	"	33	"	"	"	4 " 6⅜ "	2⅜ "
20	Oct. 7, "	Dr. H. Fehling.	Stuttgart, Germany.	"	30	Kyphoscoliosis.	Died.	"	4 " 4 "	1⅝ "
21	Oct. 19, "	Prof. Domenico Chiara.	Milan, Italy.	"	43	Malacosteon.	Recovered.	"	4 " 5 "	....
22	Dec. 13, "	Prof. Gustav Braun.	Vienna, Austria.	"	30	Rickets.	Died.	"	3 " 10 "	2⅛ in.
23	Jan. 17, 1879	Prof. Domenico Tibone.	Turin, Italy.	"	30	"	Recovered.	"	3 " 8⅛ "	2 "
24	Feb. 2, "	Dr. A. Fochier.	Lyons, France.	"	33	Malacosteon.	"	"	4 " 5 "	L. sac. cot. 1½ R. 1½
25	Feb. 11, "	Dr. Paolo Coggi.	Cremona, Italy.	"	30	Rickets.	Died.	"	4 " 2¾ "	2½ "
26	Feb. 24, "	Prof. S. Tarnier.	Neuilly, France.	Maison de Santé.	33	Fibrous pelvic tumour.	"	Dead.	....	....
27	Mar. 1, "	Prof. Domenico Tibone.	Turin, Italy.	Hospital.	39	Rickets.	"	Living.	4 ft. 4 in.	1½ in.
28	Mar. 20, "	Dr. Giovanni Peyretti.	Turin, Italy.	Hospital.	32	Rickets.	Died.	Living.	3 " 7 "	2⅛ "
29	Mar. 20, "	Prof. S. Tarnier.	Paris, France.	"	36	"	Recovered	Dead.	4 " ⅛ "	2⅜ "
30	April 2, "	Prof. Carl Braun.	Vienna, Austria.	"	25	"	"	Living.	?	2⅜ "
31	May 16, "	Prof. Giuseppe Berruti.	Turin, Italy.	Private house.	32	"	"	"	4 " 4 "	1½ "
32	May 25, "	Prof. Carl Braun.	Vienna, Austria.	Hospital.	23	"	Died.	"	4 "	2 "
33	June 19, "	Dr. Luigi Mangiagalli.	Milan, Italy.	"	24	"	Recovered.	"	4 " 8⅝ "	Free space 1½–2 in.
34	June 20, "	Prof. Carl Braun.	Vienna, Austria.	"	?	"	"	"	?	?
35	Aug. 28, "	Prof. Domenico Chiara.	Milan, Italy.	"	35	"	"	"	4 " 4 "	2½ "
36	Nov. 19, "	Dr. J. Lucas-Championniére.	Paris, France.	"	26	"	"	"	4 " ¾ "	3⅛ "

No.	Time in labour before operation.	Cause of death in woman.	Condition of woman at time of operation.	Special notes.	References.
11	Labour not commenced.	Broncho-pulmonary œdema.	Exhausted and almost moribund.	Died in 36 hours; induction of labor attempted.	Giornale Veneto di Scienze Mediche, Feb. 1879, p. 118.
12	10 to 12 hours.	R.	Favourable.	....	Lo Sperimentale, Florence, 1879. Weiponer.
13	About 12 hours.	Septic peritonitis.	Favourable.	Died on the 4th day; uterus opened and excised with Paquelin's knife.	Annali Universali, Milan, 1878, p. 408.
14	" " "	Septic peritonitis.	Pulse 96 before, 86 after.	Müller's modification. Died in 40 hours.	Ann. di Ostetricia, Milan, 1879. Tibene.
15	3 days.	Septic peritonitis, sixth day; pus found in shut cervix.	Febrile; external os closed.	Müller's modification.	Centralblatt für Gynækol., 1879, iii. 289–295.
16	As soon as waters broke.	R.	Favourable.	Müller's modification.	Archiv. für Gynækol., xiv. Liepzig, 1879, 102–120.
17	12 hours.	Anæmia and peritenitis.	Very unfavourable.	Died in 46 hours; blood and clots in peritoneum; severe hemorrhage in operation.	Ann. Soc. Med. Chirurg. de Liège. Supra.
18	15 hours.	R.	Favourable.	....	Perolio's Pamphlet. Supra.
19	11 hours.	R.	Favourable.	....	Wiener Med. Wochen., 1879, 20–21.
20	Evening to 10 A.M.	Septicæmia.	Favourable.	Died on the 5th day.	Centralblatt fur Gynækol., 1878. Fehling.
21	About 24 hours.	R.	Favourable.	....	Annali Universali, 1878, p. 420.
22	" " "	Peritonitis.	Favourable.	Died in 2½ days.	Wiener Med. Wochen., 1879, 12, 13, 15, 16.
23	Entered in labour; membranes not broken.	R.	Pulse 104, fœtal 152.	....	Ann. di Ostetricia, Ginec. e Ped., 1879, pp. 129-148.
24	Active labour 6 hours.	R.	Not very favourable.	2 months under preparation in hospital	Archives de Tocologie, Paris, Nov. 1879, p. 675.
25	Pains only fairly begun.	Peritonitis.	Excellent.	Died on 9th day.	Communicated by the operator, Feb. 1880.
26	7 days, interruptedly.	Septicæmia.	Chills, fever, fetid discharge, fœtus putrid, gas in utero.	Müller's modification. Died in 3 days.	Annales de Gynæcologie, Aug. 1879, p. 81.
27	At term, but not labour.	Peritonitis.	Favourable.	Died in 36 hours.	Annales de Gynæcologie, Dec. 1879.
28	15 hours.	Tetanus 10th day.	Favourable.	Vomiting, fever, and tympanites preceded the tetanus; no peritonitis.	Taglio Cesarea, etc., Turin, 1879. Peyretti.
29	5 days irregularly, waters broken for 3 days.	R.	Not favourable.	Fœtus putrid.	Annales de Gynæcologie, Supra.
30	24 hours, waters broken ¼ hour.	R.	Favourable.	....	Communicated by Dr. Welponer. Vienna.
31	About 12 hours.	R.	Favourable.	First labour; left sacro-cotyloid diam. collapsed.	L'Independente, Turin, 1879.
32	About 10 hours.	Peritonitis.	Favourable.	....	Communicated by Dr. Welponer. Vienna.
33	1½ days, waters broken a few hours.	R.	Favourable.	....	Annali di Ostetricia, Sept. 1879.
34	About 6 hours.	R.	Favourable.	8th case and 4th cure in the Vienna Hosp.	Communicated by Dr. Welponer. Vienna.
35	At term, but before labour.	R.	Favourable.	Six weeks in preparation.	Annali di Ostetricia, Oct. 1879, p. 573.
36	3 P.M. of day after labour began.	R.	Favourable.	....	Annales de Gynæcologie, Dec. 1879, p. 445.

Women died, 18; recovered, 18. Children living, 33; dead, 4.

prove to be correct. This reduces the European list of Dr. Pinard to thirty-four. In a letter dated from Vienna, Nov. 26, 1879, in reply to a question from me, Dr. Welponer writes, "the case of Prevôt (Moscow) is not at all known here." I wrote to Moscow on the receipt of this, and am also in search of other cases, which should have been reported to me before this time.

Dr. Fancourt Barnes in the number of the *British Medical Journal* for January, 1880, appears to think the Porro record fails to make as good a showing as the more recent Cæsarean operations on the Continent. Will these latter bear the same persevering search as has been made by a number of Europeans and myself, and make a better record than now appears in my table, with 12 recoveries and 8 deaths in the last 20, and 18 children delivered alive? Drs. Tarnier, Fochier, Pinard, Welponer, Chiara, and Wasseige appear to think the Porro method much less mortal. In private practice on the Continent, and with the advantages of operating early, possibly one-half of the cases might be saved under the old system, or even more. I know they can be in the United States, but then comes in that *sine qua non*, that so rarely attainable *early*, reached with us in about one case out of four or five. Out of such we may save as many as six or seven in ten; but then what of the great balance?

Causes of death.—The Porro method reduces the proportion of deaths by shock and exhaustion, and almost entirely avoids the risk by secondary hemorrhage, which, when it does occur, is easily arrested by the perchloride of iron, or tightening the ligature. The causes of death are generally traumatic, or septo-traumatic peritonitis, and septicæmia without peritoneal inflammation. Thus we find 6 deaths from peritonitis, 5 from septic peritonitis, and 3 from septicæmia. The remaining deaths are one each from shock, exhaustion, broncho-pulmonary catarrh, and tetanus without peritonitis, a very rare cause of death in temperate latitudes.

Hospital and private cases.—In the regularly established hospitals there were 32 operations: 1, in a maison de santé; 1, in an old school-house, but under hospital direction; and 2, in private houses. One of the private patients died, having a malignant disease as an additional source of danger. The question of result in private practice chiefly concerns us, and can only be solved by an experimental experience at home. To fully appreciate what has been accomplished in these old hospitals of Europe, we should bear in mind that many of them have been regarded as little better than pest-houses, where hospitalism has abounded. Most of the Italian buildings were old convents, and are not well adapted to secure surgical success. This is shown by the results of ovariotomy, which are much behind the proportions of England and our own country, although improving of late. Of seven operations in which both ovaries were removed but one case recovered, and that was operated on by Dr. Franzo lini last year, who saved four ovariotomy cases in five during 1879.

713 LOCUST STREET, PHILADELPHIA, February, 1880.

ARTICLE III.

ON CONGENITAL ATRESIA OF THE PULMONARY ARTERY.[1]

By ALBERT F. STIFEL, M.D., of Wheeling, West Virginia.

Case.—A female infant was brought to the St. Jacobs Hospital in Leipzig for treatment of a blennorrhœa conjunctivæ. In the hospital record nothing is mentioned of cyanosis, which was probably absent. The infant died when six weeks old from exhaustion, without any particular premonitory symptoms.

Post-mortem examination[2] 15 hours after death.—Poorly nourished; eyelids adherent; conjunctivæ covered with a mucous substance; umbilicus well healed; brain engorged with blood of a deep purple colour; the greater part of the lungs distended with air, but some atelectatic spots of a blue colour present. The heart, altogether, large; greatest length, 48 mm., greatest breadth 35 mm. The walls of the right ventricle are very thick, measuring at the base 6 mm., at the apex 9 mm., but they surround a very small sinus. The walls grow thinner towards the infundibular portion, but still remain of considerable thickness. On trying to pass a probe from the infundibular portion of the right ventricle to the pulmonary artery, an obstacle is found, which, on closer examination, proves to be a membranous septum, entirely obliterating the orifice of the pulmonary artery. The position of this septum corresponds to the semilunar valves, which appear to have grown together. Beyond this septum the pulmonary artery is permeable, and communicates with the aorta through the open ductus arteriosus. The circumference, including the walls, of the aorta before meeting the ductus arteriosus is 30 mm., the pulmonary artery 17 mm., the ductus arteriosus 9 mm. In the septum of the ventricles, corresponding to the pars membranacea, there is an aperture measuring 3.5 mm. In the right ventricle it is between the anterior and left tricuspid, in the left ventricle between the posterior and right mitral valve. The tricuspid valves are normal. The foramen ovale is open, only a few fibres of the endocardium passing over it; largest diameter 10 mm., smallest 6 mm. On the left side of the heart the ventricle appears to be considerably dilated. The walls measure at the base 4 mm., at the apex 5 mm. in thickness. The valves of the aorta are normal, while on the anterior mitral valve there is a rugged excrescence. The course of the aorta and pulmonary artery, with the above-mentioned exceptions is normal. Both kidneys are very small; the one measuring: length 17 mm., breadth 10 mm., thickness 5 mm.; the other: length 20 mm., breadth 11 mm., thickness 4 mm. The cortical substance is very thin. On the surface of one kidney there are small cysts containing a clear liquid. Microscopical examination proved the existence of an interstitial nephritis. Otherwise nothing abnormal could be found at the urino-genital organs. The spleen is large. The intestinal tract, with the exception of a Meckel's diverticulum, normal. The liver is small, firm, and of a dark purple colour. The umbilical arteries have a knotty appearance, and contain some dark red thrombi.

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[1] An Abstract of an Inaugural Dissertation presented in 1879 to the Medical Faculty of the University of Leipzig, for the degree of M.D.

[2] By Prof. Cohnheim, through whose kindness I am permitted to use this case.

Of the 46 cases of atresia of the pulmonary artery which I have found described in the literature of the subject, the trunk of this artery was represented by a solid cord in six cases; in thirty cases the pulmonary orifice was completely closed, while in the ten remaining cases it could not be ascertained exactly where the obliteration had taken place. In thirty-five of these cases the septum ventriculorum had an aperture, the defect usually being near the base. The ductus arteriosus was permeable in thirty-eight cases, closed in four. The foramen ovale was found open in twenty-eight cases, closed in four, not recorded in fourteen. Twenty-three died before the close of the third month, eleven between the third month and end of twelfth month, seven between the first and twelfth year, one reached the age of twenty-one years, another thirty-seven years, three unknown. In eleven cases the orifice of the aorta was moved to the right, above the septum of the ventricles, or, as in some cases, to the right of the septum, arising completely from the right ventricle.

When the pulmonary artery is closed the blood of the right side can flow to that of the left by passing through one or both of the apertures in the septum of the auricles or that of the ventricles. Either one of these is quite necessary for the circulation of the blood. After the blood has entered the left side of the heart there is no further hindrance to its re-entering the systemic circulation. The pulmonic circulation receives its blood from the aorta through the ductus arteriosus. In four cases the ductus arteriosus has been found either absent or closed. In the extraordinary case of Voss,[1] where the man reached the age of thirty-seven years, the bronchial and the anterior coronary arteries were found very large, permitting a sufficient pulmonary circulation for so many years. In the case of Mallwo[2] the bronchial arteries were not examined. Also in a case of Fearn,[3] the means by which the lungs were supplied with blood was not ascertained. In the case of Chevers[4] the left subclavian artery is supposed to have supplied the lungs with blood. With an open ductus arteriosus and an aperture in the septum of the auricles or ventricles the atresia of the pulmonary artery will be no hindrance to the circulation, provided all those openings are large enough. An imperfect arterialization of the blood will be a necessary result of this deformity in any case. The venous blood of the right side is mixed with the arterialized blood of left auricle, which comes from the lungs, to pass through the left ventricle to the aorta; partly to pass into the systemic circulation, but also to enter the pulmonic circulation through the ductus arteriosus. Thus, while the systemic circulation receives some venous blood, part of the arterialized blood which has just passed through the pulmonic circulation is returned to it again.

It can hardly be doubted that these deformities of the heart are congenital. The death at an early age, the symptoms in many cases of imperfect arterialization of the blood from a time soon after birth, the open ductus arteriosus and foramen ovale, and especially those cases where death has taken place during the first few days of life, leave no room for doubt on this point. The septum ventriculorum grows from the apex towards the base of the heart, and this part is the last to completely separate the two ventricles. Embryologists agree that this septum is completed between the sixth and eighth week of intra-uterine life. If the development of this septum is retarded by the blood, which has no other way of escape from the right ventricle when the pulmonic orifice is closed than to pass through the aperture of the undeveloped septum to the left ventricle, then the impediment to the escape of blood in the pulmonary artery must have existed before the close of the second month. Meyer,[1] Peacock,[2] Kussmaul,[3] and nearly all the writers on this subject believe that this septum is retarded in its development and not perforated by a pathological process as v. Dusch[4] and Bouillaud[5] have claimed. If the theory of perforation of the septum were correct, then we would expect to find the edges of the aperture showing a pathological process in many cases, we would expect a perforation of the septum to occur during after-life; and unless the septum of the embryo should be peculiarly liable to perforation, we would expect to find a perforation of the septum, both in intra- and in extra-uterine life, without any other alterations of the heart. But the contrary is usually found: the edges of the aperture, as in our case, are nearly always smooth, and perforation without any other abnormality is a very rare occurrence. That the pressure of the blood in the right ventricle cannot perforate a once completed septum, is shown in those cases of atresia of the pulmonic orifice in which the septum of the ventricles was found complete, the blood escaping through the foramen ovale and the right ventricle being a useless appendage. Such cases have been described by Hunter,[6] Rokitansky,[7] Hare,[8] Peacock,[9] Olivier,[10] and others.

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[1] Norsk. Magazin., 1857.

[2] Virchow's Archiv, Bd. XIX., p. 438.

[3] See Peacock on Malformations of the Heart. 2d Edition, London, p. 74.

[4] Ibid.

The majority of writers on the subject agree that the obstruction in the pulmonary artery is the primary change, which causes the foramen ovale and ductus arteriosus to remain open and hinders the perfection of the septum of the ventricles. If this obstruction comes before the completion of the septum ventriculorum, then the further development of the septum will be deterred. If the septum is complete the blood will have to pass through the foramen ovale, which current will cause the foramen to remain patent.

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[1] Virchow's Archiv, Bd. XII. p. 518.

[2] Loc. cit.

[3] Zeitschrift für rationelle Medecin, Bd. XXVI. p. 118.

[4] Verhandl. des naturhistorich-medic. Vereins zu Heidelberg, Bd. I.

[5] See Peacock, loc. cit., p. 162.

[6] Med. Observ. and Inquir., vol. iv. p. 330.

[7] Wochenblatt d. Zeitschrift der k. k. Gesellschaft der Aertzte z. Wien. I. No. 14.

[8] Peacock, loc. cit., p. 71.

[9] Idem, p. 72. Case VI.

[10] Bull. de la Soc. Anat., vol. xxxvi. p. 320.

Should the aperture of the septum ventriculorum not be large enough then the blood will accumulate in the right auricle and flow through the foramen ovale, keeping both passages open for the escape of the blood of the right side. If the lungs receive a small quantity of blood through a small ductus arteriosus, the left auricle will also receive less, and the weaker pressure in this auricle, as compared with that of the right, may assist in causing a current through the foramen ovale and keeping it open. The unequal pressure in the aorta and pulmonary artery will cause the blood to flow through the ductus arteriosus; the current will then prevent its closing. The expansion of the lungs in after-life, which will cause the aspiration of blood as well as air, will help to lower the pressure in the pulmonary artery and will make the difference in pressure still greater. In those cases where the orifice of the aorta appears to be moved to the right and to arise partly or wholly from the right ventricle, Meyer believes that a dilatation of the right ventricle has pushed the septum of the ventricles to the left, so that its free margin comes to stand under or to the left of the aorta. Heine,[1] having described a case of this kind, believes that the deviation of this septum to the left is a primary malformation, causing, as he concludes, the atresia of the pulmonic orifice. He thinks that if the aorta arises from the right ventricle the pulmonary artery will become useless and obliterated. But, as Kussmaul has already shown, we cannot conceive any position of the pulmonary artery and aorta in the right ventricle, in which blood will not be pressed into the one as well as the other. A current will pass through both, and either current will not stop for a teleological reason alone. Kussmaul believes that the obstruction in the pulmonary artery before the septum of the truncus arteriosus meets with that of the ventricles prevents the semispiral turn, which the pulmonary artery and aorta normally make, causing the aorta to arise further to the right than usual.

Halbertsma[2] not only agrees with Heine, in so far that he believes the septum ventriculorum deviates in these cases by perversion in the process of development, but he claims that the septum of the truncus arteriosus also deviates from a more or less vertical direction to take a more horizontal course, until its lower margin combines with what would be the pulmonic orifice and obstructs it, instead of connecting with the septum of the ventricles. I think Halbertsma has overlooked one obstacle to the deviation of the septum of the truncus arteriosus. As soon as this septum turns to take a horizontal position, and closes the pulmonic orifice, a great part of the truncus arteriosus will be occluded, and the aorta will then have to carry a current equal to that carried by the whole truncus arteriosus heretofore. If a current of blood can prevent the closing of the ductus arteriosus and foramen ovale, which it certainly can, then it is highly probable that such a current, by its pressure on the septum of the truncus arteriosus will prevent this from deviating to a horizontal direction and obstructing about one-half of the truncus arteriosus. An inflammation or any other pathological process will have to overcome the same force, but we have ample proof that a pathological process can overcome a very strong current in the constriction of the orifice of the aorta in after-life, where a complete atresia would probably result in many cases if life would not necessarily cease before that time. In a case which Halbertsma describes, the longest diameter of the right auriculo-ventricular aperture was parallel to a frontal section instead of the usual nearly sagittal direction. He claims this could only be explained by a perversion of the process of development or deviation of the septum ventriculorum, which drew the anterior corner of the aperture to the left. It may be that the septum draws the anterior corner of the aperture to the left, but why should this only be possible by a perversion of the process of development and not by a septum which is pushed to the left during a dilatation of the right ventricle?

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[1] Angeborene Atresia des Ostium arteriosum dext. Dissert., Tübingen, 1861.

[2] Archiv f. d. holländ Beiträge, III. p. 387.

Equally interesting and important is the question why the valves and apertures of the right ventricle are the favourite seat of disease during intra-uterine life, while in after-life those of the left side are, in nearly all cases, the first to be affected, yet a satisfactory answer has not been given. Friedreich[1] thought the walls of the right ventricle had to overcome a greater pressure during the systole of the heart in fœtal life, while in after-life it is known that the left ventricle has the greatest pressure to bear. He concluded that the ventricle which bears the greater pressure and friction is the most liable to disease. However plausible this explanation may seem for the predisposition of the left ventricle in after-life to inflammation, it will not be so satisfactory in those cases of congenital atresia of the pulmonic orifice where the septum of the ventricles is not completed. In these cases the foramen ovale permits the equal division of blood for the two ventricles, and before the septum of the ventricles is completed, or when only a rudiment of such is present, as in some cases, it is difficult to understand how one side of these united ventricles should have to exert more force, bear more pressure, or be subject to more friction than the other. If the thickness of the ventricular walls of the fœtal heart show the relative proportion of pressure the respective ventricle has to bear and overcome, then, indeed, it would appear that the left ventricle does the most work before its septum combines with that of the truncus arteriosus. Kölliker, in his *Entwickelungsgeschichte*, 2d ed., page 909, fig. 557–3, gives an illustration of a section of the heart of a four weeks' old embryo, with a rudimentary septum ventriculorum, in which the walls of the left ventricle are considerably thicker than those of the right, and Kölliker distinctly mentions this fact on the following page. Speaking of the third and fourth month (page 911) he says: "The walls of the right ventricle, although thinner in the beginning than those of the left, soon attain the same thickness as these [of the left ventricle], which relation also remains during the whole future embryological time." It seems to me we should expect this *a priori* when we remember that the free communication of the blood, before entering the ventricles through the foramen ovale, and afterwards through the ductus arteriosus, permits the equalization of blood and work for the two ventricles. In the absence of any more satisfactory explanation, Peacock is disposed to think that the more immediate connection of the right ventricle with the circulation in the umbilical arteries, may explain the greater liability to disease of the pulmonic orifice: for the circulation in the cord and the placenta would appear to be more liable to temporary obstruction than that in the body of the fœtus itself. He says: "We know that in after-life the variable pressure of the blood in the arterial system is a fruitful cause of disease in the aortic valves." But it is just as probable that a temporary obstruction of the umbilical arteries will prevail on the valves of the aorta as on those of the pulmonary artery. The pulmonary artery may supply the greater part of blood in the descending aorta and umbilical arteries, but it does not necessarily follow that variation of pressure in the latter will cause this variation to go back, taking the longer and more indirect way through the ductus arteriosus to the valves of the pulmonary artery, more quickly than to the aortic valves. What has been claimed for the ductus arteriosus before may also answer here: this ductus will permit the equalization of pressure in the two arteries very readily.

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[1] See Kussmaul. Zeitschr. f. ration. med., loc. cit.

Returning to our own case, the theory of primary obstruction of the pulmonary artery still offers the most plausible explanation for the condition of this heart. The product of an inflammation, which may have caused the atresia, may have disappeared in the rapid progress of development after the end of the second month of intra-uterine life. The granular nodule, however, on the mitral valve goes to show that this heart was certainly not free from inflammation. The large foramen ovale permitted the surplus blood from the right heart to enter the left auricle, preventing an extra pressure on the walls of the right ventricle during their diastole and thus did not cause a dilation of this ventricle. As soon as the right ventricle contracted, and the valves of the right auriculo-ventricular aperture were closed, it took strong pressure on the part of the right ventricle to press the blood through its only small outlet, the aperture of the septum ventriculorum, and to overcome the pressure of the left ventricle. This explains the concentric hypertrophy of the right ventricle.

If we accept the theory advocated by Louis, Stillé, Rokitansky, and Peacock, that cyanosis is caused by congestion of the venous system, then we can readily account for the fact that no cyanosis was noticed during life or even directly before death in our case. It cannot be doubted that a free intermixture of blood did take place in this case; and the large foramen ovale may have prevented a stasis in the venous system. The condition of the kidneys appears to contradict this, as the hypertrophy of the connective tissue can be best explained by a venous congestion. It is highly probable that there was a venous congestion during intra-uterine life, which, I think, can be accounted for. As soon as the pulmonic orifice was closed the aorta was the only outlet for the blood of both ventricles. Now, if the compensatory dilatation of the aorta did not proceed as rapidly as the closure of the pulmonary artery, a venous stasis necessarily followed. This venous congestion could cause an exuberant growth of the connective tissue of the kidneys, which may have prevented their proper development after the aorta was wide enough to permit the free passage of the blood from the venous system, and caused them to be very small at the time of death.

The references to the principal papers on congenital atresia of the pulmonary artery will be found in the following:—

BIBLIOGRAPHY.—*Hunter*, Med. Obs. and Inq., vol. vi. 1783, p. 291. *Rokitansky*, Wochenblatt d. Zeitschrift d. k. k. Gesellschaft der Aerzte zu Wien, I. Jahrg., No. 14. *Meyer*, Virchow's Archiv, Bd. xii. p. 518. *Peacock*, On Malformations of the Human Heart, 2d ed. 1866, London. *Voss*, Norsk. Magazin, Bd. x. Heft 10, 1857. *Kussmaul*, Zeitschrift für rationelle Medicin, Bd. xxvi. 1866, p. 122. *Fleischmann*, Leichenöffnungen, Erlangen, 1815. *Dorsch*, Die Herzmuskelentzündung als Ursache angeborener Herzcyanose, Dissert., Erlangen, 1855. *Olivier*, Bull. de la Soc. Anat., vol. xxxvi. p. 320. *Meckel*, Meckel's Archiv, Bd. i. *Stillé*, American Journal of Medical Sciences, N. S., vol. viii. 1844, p. 25. *Ecker*, Beschreibung. einiger Fälle anomaler Communication der Herzvorhöfe, Freiburg, 1839. *v. Dusch*, Verhandlungen des naturhistorisch. medicinischen Vereins z. Heidelberg, Bd. i. *Mallwo*, Virchow's Archiv, Bd. xix. p. 438. *Mauran*, The Philadelphia Journal, vol. xiv. 1827, p. 253. *Fearn*, Lancet, 1835, vol. i. p. 312. *Heine*, Angeborene Atresie des Ostium arteriosum dextrum, Dissert., Tübingen, 1861. *Stölker*, Ueber angeborene Stenose der Arteria pulmonalis, Dissert., Bern, 1864. *Friedburg*, Die angeborene Krankheiten des Herzens, Leipzig, 1844. *Halbertsma*, Archiv für die holländische Beiträge, Bd. iii. 1864, p. 388. *Rauchfuss*, Petersburger medicinische Zeitschrift, 1864, Bd. i. p. 370. *Chevers*, Pathological Transactions, vol. I. p. 204. *Baly*, Ibid., vol. x. p. 90. *Crisp*, Ibid., vol. i. p. 50. *Hervieux*, L'Union Méd., p. 111, 1861. *Weiss*, Ueber Stenosis, Art. pulmonalis congen, Dissert., Erlangen, 1874.

ARTICLE IV.

RAPID LITHOTRITY WITH EVACUATION.

By E. L. KEYES, A.M., M.D., Adjunct to the Chair of Surgery, Bellevue Hospital Medical College, Surgeon to Bellevue and Charity Hospitals, New York.

THIS operation, to which its inventor has given the name Litholapaxy, has been sufficiently long before the profession to be tested and to be declared a successful procedure. It seems to be upon the eve of general adoption by surgeons in this country and in England, as attested by the comparatively numerous cases reported of late in the journals accompanied by brief remarks, these coming from varied sources.

The success of the new departure in vesical surgery is due to the general acceptance by the profession of the fact that the bladder tolerates prolonged manipulation kindly if left empty afterwards, a principle worked out and first clearly demonstrated to the world by Prof. Bigelow, to whom certainly belongs the credit.

Upon this principle of vesical tolerance, however, the method rests, and not upon any particular instrument or set of instruments,—as witnessed by numerous slight changes already made and possible yet to be made by Prof. Bigelow in his own apparatus, as well as by the fact that a number of other operators have performed the identical operation perfectly well with other instruments.

In consideration therefore of these two facts, (1) that the operation seems to be about to fall into the domain of general surgery, and (2) that different surgeons have succeeded well with the operation using indifferent instruments, I look upon it as a duty of any one who has had any considerable experience in this method to contribute that experience to the common fund of information now rapidly accumulating, in order that the profession as a whole may profit thereby. Different points in the detail of manipulation and otherwise come up in various cases. These should all be exposed for general comment; for it is out of the sum of these that general laws governing the operation must eventually shape themselves.

It is in this spirit that this paper is now written—to contain all the practical points of experience gained by Dr. Van Buren and myself from contact with the patients upon whose histories it is founded. In these cases we have been constantly associated. It has fallen to my lot to perform most of the operative work, but to the wise counsels of my senior I must ascribe much of the success which attended many of the operations.

In discussing the subject I shall use information derived from all valid sources, and impartially discuss my own errors with those of others. My object is to get at the truth and to search for it fearlessly. It is only in this way I believe that a true estimate of the points under consideration can be reached. In referring personally to different surgeons I do so that the authority for the points I make may not be open to question.

Before undertaking litholapaxy I had performed the crushing operation in whole or in part in connection with Dr. Van Buren in eighteen cases, and the experience gained in the very numerous sittings, without ether, which these cases called for, has been of incalculable value in executing the new operation. I have on several occasions seen a surgeon perform litholapaxy who had never used the lithotrite in the bladder of a patient not under the influence of ether.

But one conclusion was possible after watching these operations, namely, that the general surgeon is not competent to perform rapid lithotrity well until he has first learned how to manipulate the bladder carefully by a training at slow lithotrity. No ordinary surgical tact and ability seems capable of taking the place of a little special training, and my conclusion is absolute and mature that the general surgeon does not do justice to his patient if he subjects him to rapid lithotrity before he (the surgeon) has trained his own hand. One or two cases of slow old-fashioned lithotrity are enough. After such a training in a sensitive bladder without ether any surgeon is as capable of performing rapid lithotrity with ether as he is of executing any other surgical manœuvre. He may not make as brilliant a figure at the operation as another surgeon who has crushed more cases, but he does the work safely, and with suitable instruments does not subject his patient to any unnatural risks.

The operation promises to become general among surgeons, and in this protest that ordinary surgical training does not fit a man to operate in the bladder under ether, I think most lithotritists will join me. There is no possible objection to allowing the operation to fall into the domain of general surgery. It is a safer and better operation for dealing with most cases of stone in the adult than lithotomy is, and the latter has always belonged to the list of general surgical operations.

Rapid lithotrity must eventually take the place of lithotomy because it is a better and a safer operation; but to take the place of lithotomy it must be made a general operation capable of being safely performed by the general surgeon, and this it will doubtless some day become.

At present I think it is at least questionable whether any surgeon has a right to use a lithotrite for the first time upon the bladder of a patient rendered insensible by an anæsthetic. There is no royal road to rapid lithotrity which is a safe one. The straight path lies by slow lithotrity in a suitable case with small stone in a patient having full possession of his vesical sensibility.

These remarks are made in good faith and seriously, because the operation in this country is already tending to become general. This is proved by the sale of lithotrites. I have not extended my inquiries beyond New York in this matter, but have been satisfied of the fact above stated from the returns made by the three largest instrument dealers in this city.

One of these tells me that he sold a dozen lithotrites in 1879, the rate being two to three a year in previous years.

Another reports eighteen sold in 1879, remarking that there was an extra call for lithotrites after the appearance of Prof. Bigelow's paper on litholapaxy (*American Journal of the Medical Sciences*, Jan. 1878). The third sends a list of sales, the rates being taking for periods of two years instead of one. This list shows 81 lithotrites sold in 1878 and 1879, against 46, the largest number in any previous two years.

These figures I think prove the point claimed, and justify the caution formulated above. The general surgeon has a full right to use this operative procedure, but he should approach it respectfully. Various instruments with which he is presented may help him, but they cannot do the operation for him. Any one can catch the bladder with any instrument, if he tries to do it, but no man should operate upon an insensible patient unless he is able to tell at once that he has caught the bladder and expert enough to drop it before he has bruised it.

An instrument to be serviceable in this operation must be one which does not readily catch the bladder, is not sharp enough to injure it if it does catch it, and cannot clog.

Injury to the Bladder and Urethra.—Yet injury to the bladder is not a matter of great importance, apparently, in this operation. The bladder is very patient when left empty after the injury has been inflicted. The deep urethra, on the other hand, resents violence much more positively. It is wise to inflict no injury in either locality, but if choice must be made the deep urethra calls for the greater forbearance.

My own experience in this line is confined to four cases, in two the bladder was injured without the least serious result. In the third the urethra was injured and death followed. In the fourth the urethra and vesical neck were injured and the result was nearly fatal. The cases are briefly these:—

Case A.—An old man of 70, who had relied upon the catheter for sixteen years, having a bladder totally atonied, and urine full of pus, one day broke off two and a half inches of a worn-out woven French catheter in his bladder. This I attempted to remove with an old fashioned fenestrated lithotrite, a dangerous instrument having a cutting edge to the male blade. I had never before put any lithotrite into the bladder of a living person. I promptly caught something soft corresponding in size to the small woven catheter, flat and water-soaked as I judged it to be. I screwed down lightly on the object caught. The patient said he felt nothing whatsoever (I had forgotten that his atonied bladder was almost insensitive), and as I moved the jaws of the lithotrite, the object caught moved freely, since the thin flabby walls of the bladder were more like a a bag of soft wet leather than anything else. Still the patient continued to assure me that he felt nothing, and I had not at that time any education in my touch to teach me what I had caught. I, therefore, screwed the male blade down hoping to crush the woven catheter at the point caught, and then, relaxing the male blade, to have a flexible hinge upon which the two ends of the catheter could bend backward during their passage through the neck of the bladder.

So loose were the tissues in this case and so insensitive the bladder, that the patient made no complaint until I had withdrawn the lithotrite to such a distance as to put the tissues into a condition of tension at the point caught. Then came the first mild complaint, and now by free rotary movements of the lithotrite I learned that I had caught the bladder. I unscrewed the lithotrite and made all efforts to liberate the bruised fold of mucous membrane, but it had been cut and crushed to such an extent by the sharp male blade that I failed to disengage it and succeeded only in tearing away the piece which had been caught and bringing it out through the urethra. The piece contained some muscular fibres, but was, mainly, a strip of mucous membrane one inch long by one-third of an inch wide.

No blood followed this violence; no chill, no increase in the cystitis, and on the next day but one, with a small scoop lithotrite I had no difficulty, without ether, in catching and extracting the foreign body.

No harm came to the patient. He died five years later of apoplexy.

CASE B.—While trying to construct an instrument which would not clog, and working with great rapidity in one case of slow old-fashioned lithotrity without ether, I pinched up a small piece of mucous membrane along with the stone and bruised it considerably, bringing away a minute shred of mucous membrane and occasioning some hemorrhage.

The intensity of the cystitis was aggravated in this case although there was no chill; but whether the cystitis was due to the injury done the bladder (which was very moderate), or to the broken mass of stone left in the viscus, is not evident. This patient was shortly afterward subjected to rapid lithotrity at my hands, and promptly and entirely relieved.

Since adopting the operation of rapid lithotrity I have never once pinched a fold of mucous membrane in the bladder. I have frequently with various instruments caught a trabeculated fold of the bladder by making an effort to do so, but I have caught it lightly by design and for a purpose, always recognized it when caught and dropped it without pinching.

My experience in injury to the deep urethra during lithotrity is the following:—

CASE C.—A Reliquet lithotrite made by Collin and warranted not to clog was used by me upon a case of slow lithotrity without ether. Collin, contrary to the instructions of Reliquet, had made the male blade too short, so that it could not penetrate the female blade and clear itself. This I did not observe, but used the instrument to test it in the hospital. It clogged frightfully. I was unable to disengage the débris in the bladder and had to use some force in extracting the clogged jaws at that point of physiological constriction in the deep urethra situated normally at about two and a half to three inches from the meatus.

The slight divulsion of the urethra at this point terminated in a minute abscess; the stretching and scratching of the deep urethra, caused by drawing the clogged jaws of the lithotrite through it, prevented further efforts at lithotrity. The anglular fragments left in the bladder inflamed that organ. Pyelitis and surgical kidney resulted, and supra-pubic lithotomy with drainage of the bladder through its floor failed to save the patient.

This is the only death I have had after slow lithotrity, and it was this case which caused me to appreciate the value of small instruments, and to attempt to devise a safe lithotrite which could not become clogged in the bladder by any possibility.

CASE D.—My second experience with an injured urethra was in the case of an old gentleman, who forms one of the series of cases upon which this article is founded. He will be referred to again, when speaking of the re-accumulation of phosphates from which some cases suffer. I operated upon this gentleman and relieved his bladder of stone by rapid lithotrity. He returned with fresh symptoms after some months, but a washing operation only detected a very small phosphatic re-accumulation. Relieved of this he returned again after a few months. This time I did not even subject him to the formality of etherization, but in my office placed him upon the lounge and washed out a small phosphatic round stone as large as a pea. This was a new stone and not an old fragment re-coated. Again he returned, and in perhaps two minutes I again washed out a similar stone in the office. He walked to see me and walked away and was relieved.

Each operation on this patient was done with a tube 16 English. This his urethra took comfortably. I learned finally, by examination under ether, that this patient had a sacculated stone. Upon this stone, apparently, little buds would form and during some sudden motion break off. Symptoms would then come on at once, and after a washing the patient would be and remain entirely relieved. No blood, no sickness, no vesical reaction followed any of the operations.

But the patient became discouraged by his continued relapses, and finally, when a fresh attack came on, he applied to another surgeon. This surgeon ascribed the relapses to imperfect washings. He operated under ether and used a large evacuating tube. The operation lasted one hour. As a result a small phosphatic stone the size of a pea was produced, exactly the same, in appearance and composition, as I had twice procured by a few minutes' painless wash without ether in my office. As a result of the operation with large tubes, bloody urine for many days followed, and a most violent cystitis with general prostration, which confined the patient to his bed for two months and seriously threatened his life.

He slowly rallied, and, without using ether, I washed out, through a small tube, at a later date, another small phosphatic stone, without occasioning any vesical disturbance, and, in a prolonged search under ether, detected the sacculated phosphatic stone, which undoubtedly was the cause of the repeated relapses.

Among cases recently published, I find two facts bearing upon the point I have just made, and one on the other side. These are found in the cases collated by Dr. Weir,[1] Cases IX. (Hutchison), XI., and XII. (Wynkoop).

In Case IX. Dr. Hutchison is reported to have pinched off pieces of the mucous membrane of the bladder with my (Keyes's) lithotrite, which is said to have "worked badly." It is perhaps only just to say here that there is no Keyes's lithrotrite in the market. I have distinctly forbidden the sale of any as being my instrument. I have had a number of working models made, and have used them in all of my operations, but I am still modifying the male blade, and my lithotrite is perfect, I believe, as yet only in theory. This theory of construction I have published in the *Medical Record*, May 18, 1878, page 388. The theory implies an instrument, as compared with the older lithotrites, (1) relatively small in proportion to its power. (2) A broad flange or shoulder on either side of the shaft of the male blade, extending up to the very end of the shaft (fig. 1 *a*, page 389), that the slender shaft may not become sprung, since the shaft itself cannot well be damaged in any other way. (3) Extra breadth antero-posteriorly of the heel of both the blades, to insure strength at weak points. (4) Such a relative size of the male blade as compared with the female as is customary in ordinary scoop instruments, which are known readily to escape entrapping the bladder. (5) Such a roughening of the male blade as shall enable it to hold a smooth hard stone and yet shall not be sharp enough to seize the bladder easily. (6) Such a flaring lateral breadth to the jaw of the female blade as shall enable it to steady the stone properly while it is being seized. (7) Fenestration of the female jaw and possible penetration of the male blade slightly through it, so that impaction becomes a mechanical impossibility. On this theory, and with instruments constructed upon it, I have done all my work, and I am satisfied with the instruments, excepting in so far as the prehensile power of the male blade is concerned. When I become satisfied with this I shall advocate the use of the instrument, until then I shall forbid its sale as my instrument. Any one may buy it if the instrument makers will deliver it to him, but he does it without my sanction. I have loaned my working models to several gentlemen, and these models have always rendered good service. Where Dr. Hutchison got his instrument I do not know; I believe it was from Tiemann. He tells me that with the one he had he pinched off three pieces of mucous membrane from the bladder of an etherized patient at one sitting. It is upon this ground that Dr. Weir states that the Keyes lithotrite "worked badly." Perhaps it did.

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[1] On Litholapaxy. Am. Journ. Med. Sci., Jan. 1880.

In any case, the fact remains that no reaction followed after this violence done to the bladder, and "the result was satisfactory" in Dr. Hutchison's case.

In Case XII. (Wynkoop) Bigelow's lithotrite was used. It became seriously impacted. Dr. Wynkoop informs me that he was unable to free the impaction by making the proper movements in the bladder and by opening and shutting the blades. He, therefore, was obliged to exert as much force to extract the lithotrite as he would have done upon the forceps in a case of instrumental delivery of a child at term. The derangement in the screw, to which Dr. Weir refers, seems to have been occasioned by some efforts made to clear the blades. The jaws appear to have caught in some manner, so that some mechanical defect in the instrument was at fault, and not the principle of construction, at least so I understand it.

As a result of this laceration of the urethra, produced by the violent withdrawal of the lithotrite not screwed home, Dr. Wynkoop states that abscess ensued, and, on this account, at a later date, lithotomy through the perineum was performed to evacuate the remains of stone left after the operation of litholapaxy. Since his lithotomy the patient is reported to have done well.

Both of these cases confirm my proposition that injury to the fundus of the bladder, if the viscus can afterward be left empty, is of less importance than injury to the urethra. Hence the value of using small instruments, which cannot be made to impact by any possibility.

Case XI., Dr. Wynkoop's first case of litholapaxy, showed a number of abrasions and minute lacerations of the bladder at the autopsy. The patient's general condition was bad, and this local violence had been sufficient to light up a peritonitis. Death followed twenty-nine hours after the operation.

It is rather singular to note that these lacerations were what Professor Bigelow[1] supposed would follow the use of an instrument, made according to the principle upon which I proposed to construct a fenestrated lithotrite, while in fact these lesions were occasioned during the use of his own instrument.

This case only goes to demonstrate what is indeed self-evident, that violence done to the bladder in a weakly subject may be followed by a fatal result.

Is Litholapaxy a New Operation?—It was recognized long ago that the bladder would tolerate considerable injury without showing signs of distress, and the cystitis, after the short sittings of old-fashioned lithotrity, was known to be due not so much to the injury inflicted at the moment of operation as to the cumulative effect of the repeated acts of violence done to the bladder by the angular fragments of stone constantly present after the operation.

This fact was announced in so many words by Heurteloup long ago, and many other surgeons had recognized it. It was fully appreciated and taught by Thompson before Bigelow's first paper appeared,[2] and he (Thompson) had recommended as a remedy for acute crystitis, coming on during a course of lithotrity, that the sittings should be more closely approximated to rid the bladder of the foreign element speedily, and, even in an extreme case, that ether should be given, and the whole stone reduced to powder, if possible, at a single sitting. Yet Thompson did not then recognize the general applicability of rapid lithotrity with entire evacuation at a single sitting, and did not advise it for general use.

Neither did the other surgeons who from time to time evacuated a stone at a single sitting, with or without ether, with or without washing, appreciate the possibility of a general application of the method. Civiale's early operations were marked by the length of his sittings. As he progressed he shortened the sittings, and taught the propriety of so doing. Dr. Van Buren many years ago evacuated a large stone by washing out the dust through a catheter from an atonied bladder in a moderate number of sittings without ether, but the idea of litholapaxy did not occur to him. Neither did it occur to Clover, when he devised his washing bottle, or, if it did occur to him, the surgical world was none the wiser, and, when Nélaton constructed the French Aspirating pump, he failed to conceive the idea of litholapaxy.

It is therefore wide of the mark to imagine that Prof. Bigelow's operation is a modification of any old procedure. The operation is a totally new conception, a new design which disclosed itself to its discoverer, a design which may be executed equally well with different instruments from those with which it was first performed. The new operation forms as distinct a step in advance over the old method as Esmarch's bandage does over the tourniquet, or Dieulafoy's aspirator over the trocar and canula. Bigelow's washing bottle is not a modification of Clover's, and, if it had been, this fact would not have detracted from the credit of designing a new and effective surgical procedure.

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[1] Medical Record, June 8, 1878.

[2] Am. Journ. of Med. Sci., Jan. 1878.

The operation of litholapaxy is exclusively the property of Professor Bigelow by right of discovery; but if others object to the instruments which Professor Bigelow advocates, and do so on reasonable grounds, they are certainly justified, especially if the operation in their hands turns out as well or at all better than it does in the hands of the original inventor with his own instruments. Edison's quadruplex system in telegraphy certainly does not detract from the excellence of the Morse character. The same telegraphic character is used with the quadruplex instrument, and the latter rather intensifies the value of the Morse discovery than otherwise. So it is with litholapaxy. Its success does not depend upon the instrument, but upon the method, the method is the operation. The method is, prompt and entire fragmentation of the stone, immediate and if possible entire evacuation of the débris. No matter by what safe means through the urethra these ends are accomplished, litholapaxy, in Bigelow's sense, is performed.

The specialist in bladder disease, the man expert in manipulating the bladder, can use any instrument and do well at litholapaxy. The surgeon not very familiar with the bladder will do better, as the instruments are more suitable, as they are less likely to harm first the urethra, second the bladder. I say likely to harm, for with any instrument the bladder may be harmed, as shown in the cases already cited above. If the surgeon has not learned how to distinguish the bladder when he catches it from any thing else, he should not undertake litholapaxy under ether.

But the general surgeons are interested in this operation already, and are buying instruments, as I have shown, and they propose to do the operation, therefore it is well that they should have a variety of good instruments which have done good service from which to choose; and neither these instruments nor the number of them detract from the excellence of the first discovery of this most excellent operation.

Description of the Cases.—Twenty-four cases cover all the operations of rapid lithotrity which I have performed, nearly all of them in connection with Dr. Van Buren. By rapid lithotrity I mean operations at a single or double sitting with the object in view of evacuating the bladder at once, if possible, either by immediate urination (in case of very small stone) or by pumping with various apparatus or by extraction in the female with finger, scoops and washing tubes, operations not all of litholapaxy but all of designedly rapid lithotrity.

Of these twenty-four patients one died. Out of the twenty-four, five cases must be excluded from consideration here. Two were small stones in middle-aged men, and the operation was the old one, a short sitting without ether, and simply acquires the name of rapid because all the fragments were promptly evacuated by urination and the patients were at once relieved. One case was that of a young girl with a hairpin in the bladder surrounded by a small amount of phosphatic concretion. She was relieved at a single sitting under ether, and the bladder was washed with Bigelow's tubes and bottle; but the hairpin was the feature of this case, and the evacuation of a moderate amount of phosphatic débris simply a formal matter, not important in a litholapaxic sense, since the detritus, if left alone, could not have failed to pass out equally well through the dilated urethra.

The remaining two cases which I exclude were very old women. Their stones were crushed and entirely removed under ether, at a single sitting, but the finger and the scoop were used through a dilated urethra, and the washing was here also a secondary matter. These cases cannot justly be counted when considering the claims of a new operation like litholapaxy.

There remain therefore nineteen patients, all men, all past middle age, upon whom the modern operation of litholapaxy strictly speaking was performed. They include every case of stone in the male which has come to Dr. Van Buren and myself in the past two years. No case which offered has been refused operation. No case has been cut. No condition of disease in the patient has thus far been deemed sufficient to exclude him from a chance of benefit from the new operation. This was an error in the one fatal case, as will be shown. In it the pre-existing disease killed the patient, not the operation, and in justice to statistics he ought not to have been operated on. No child (except the girl with the hairpin) has come to us for operation for stone during these two years. No case has been cut in these years, and the cutting operation is already beginning to smack of antiquity.

These nineteen patients stand for twenty-one distinct and separate operations, two of the patients having required a new operation at the end of one year, after having been entirely relieved of phosphatic stone. Phosphatic re-accumulation in some cases is inevitable, especially where there is phosphatic calculous pyelitis, and in cases where sacculated stone is left in the bladder. One of the cases already referred to was subjected to repeated washings without ether, after his one litholapaxy, in each instance with the result of washing out a small phosphatic stone. These washings can neither be counted as new operations, nor as extra sittings of the first operation, since the new stones always formed on the existing encysted stone, and when they broke off and got into the bladder were simply washed away, in each instance relieving the patient, who is to-day up and about at his duties. All the operations were concluded at a single sitting, with two exceptions, (1) the second operation on M. of New Orleans, in which there were two sittings of about five minutes each without ether in my office, (2) S. of Brooklyn, the fatal case (No. 18).

These cases include the total personal experience of Dr. Van Buren and myself. I operated in every case. In many of the cases Dr. Van Buren did a portion of either the crushing or the washing; in the last case but one Dr. L. A. Stimson did the greater part of the operation. My working models of lithotrites were used in every case, with occasionally some other instrument. Whenever I happened to have a Bigelow lithotrite with me the urethra turned out to be small, and I was unwilling to use it. Rarely was a tube larger than 16 English (27 French) used in evacuation, and sometimes tube 13 English (22 French). Curved tubes were used rather than straight ones generally. They render the fragments less well but often pass more easily, I think. All three of the washing bottles (one of Bigelow, two of Thompson) were pretty evenly tested.

In most cases after the operation a few grains of detritus were passed or washed away in the final search always made before pronouncing the patient cured and certainly freed from stone, but on no occasion was a piece left large enough to require crushing at a second sitting, excepting in the two cases mentioned—M. of New Orleans second operation, and S. of Brooklyn the fatal case.

The oldest of the nineteen patients at the time of operation was past 73, the youngest past 46. The average age of the whole nineteen was a trifle more than 60 years.

The composition of the stones was generally phosphatic, as might have been expected from the time of life at which they occurred. No oxalate of lime stone was encountered.

The greatest length of time consumed in any one sitting, from the first insertion of the lithotrite to the withdrawal of the last washing tube—in which I did the whole of the work—was 85 minutes, and the yield in phosphatic stone was 630 grains. The longest case of the series was the last but one in which Dr. Stimson did the greater part of the work. This operation lasted 95 minutes, and yielded 495 grains, a yield decidedly above the average, and particularly striking in that the case was the first in which Dr. Stimson had operated by the rapid method. My lithotrites (the working models) were used. The bladder was not injured. The patient was out of doors in a week.

The shortest operation lasted 10 minutes, and the yield was 81 grains.

The greatest proportionate result in yield as compared with the time occupied by the operation was the removal of 540 grains of mixed uric acid and urates in 57 minutes—9 grains to the minute; and the least yield proportionately to the time was (S. second sitting) 30 grains of phosphatic stone in 60 minutes—an average of 2 minutes to the grain; and this not in an early case, but in the eighteenth of the series. The total number of minutes consumed in all the operations was 938, yielding 4241 grains of stone, an average of 4½ grains to the minute.

This is a reasonably good result, considering that the patients averaged over 60 years of age, were nearly all subjects of prostatic overgrowth, and had phosphatic stones, while in no instance was the urethra cut except occasionally at the meatus, and once (Case 21, stricture) in the first inch. Large tubes were rarely employed in evacuation. 31 French was occasionally used, but vastly the greater part of the work was done with tubes 13 and 16 English (22 and 27 French). The urethra was in no instance overstretched in order to hasten the operation. In all of the earlier cases much time was unnecessarily consumed in prolonged crushings and infrequent washings, a procedure which is certainly not appropriate in this operation. Moreover Dr. Van Buren and myself were mutual workers and mutual learners in this operation, and were constantly inciting each other to caution, and demonstrating different features of the operation as they were recognized, thus losing much time.

Yet that a difficult case may give a small yield for a long operation is shown by the second sitting in case 18, in which an hour of diligent work only yielded half a drachm of débris.

In the ordinary run of cases therefore, judging from this experience, cases mostly of large prostate and of light soft stone, which often crushes like mortar and does not crackle into numerous angular fragments like the acid stones, an average yield of about five grains of dried stone to the minute of work seems to be what may be reasonably expected, and about three hundred grains to the hour a fair proportion. In a patient with healthy prostate and capacious urethra, having a large friable acid stone, from 15 to 20 grains to the minute would not be too much to expect with ordinarily expert work. A good case of this sort has not yet applied for relief to Dr. Van Buren or myself since we adopted the Bigelow operation. In the best case of the table (No. 14) where the stone was acid and an average yield of 9 grains to the minute was obtained, the patient was suffering from inflammatory epididymitis at the time of operation. The crushing was very satisfactory, but tube 16 (English), made by Weiss, was used, and it constantly became impacted by the lodgment of an angular fragment which could only be displaced by withdrawing the tube. The peculiar shape of the fragments seemed to be the cause in this case of the impaction of the tube. Impaction, I find, happens less often in Bigelow's tubes than in the English tubes, but it has occurred in the former in my hands and in those of Coulson.[1]

This question of the quantity of débris to be expected from fair work extending over a given limit of time is, I think, an important one. It has not yet been fairly raised by any operator except Thompson. My own average as shown above is 4½ grains of dried stone to the minute, and I think this quite small. I confidently expect to produce double that amount in future, but do not regret that caution in operating which has led to this modest result in the past. How excellent a result may be produced by a hand long skilled in the performance of the old operation is shown by the average attained by the master lithotritist, which I have computed from his first list of cases, the only ones thus far published in detail. These 13 cases[1] show an average of 16½ grains of yield to the minute, where the stone was composed of uric acid or oxalate of lime, and of 12½ grains to the minute where the stone was phosphatic.

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[1] Lancet, Jan. 31, 1880, p. 162.

In his second article, where he reports a total of 31 cases (without details),[2] Thompson states that he has "hitherto removed on the average from 150 to 200 grains in 10 minutes of hard calculus (uric acid or oxalate of lime)." This increase of average proves the advance made in his later over his earlier cases in precision and rapidity of execution, as well as (doubtless) improvement in the washing bottle and increased familiarity with the method. When however he adds that "when the stone is friable, as in the case of phosphatic formations, a larger quantity may be removed in a given time," I must hesitate to accept the conclusion, since it appears to me opposed to the nature of things. Most phosphatic stones certainly require more crushing than most acid stones, on account of the facility with which many of the latter crackle up into angular fragments, segmentation going on laterally as well as in the line of the crushing force. Certain phosphatic stones do fall to pieces at a touch, but many are toughly cemented together in their layers, and break more like pieces of mortar. Moreover, as I have pointed out in Thompson's first series[3] (the only ones of which the details are published) the acid stones averaged a greater yield by the minute than the phosphatic stones: as 16½ to 12½.

Aside from the question of crushing, the capacity of the Bigelow bottle and similar washing apparatus for speedy delivery of small stones and fragments from the bladder is shown by the remarkable case of Thomas Smith, who on November 25, 1879, using a 16 English tube, in 20 minutes washed three ounces (℥iij) of small stones (dry weight) from a patient aged 69, without using any lithotrite. Nine days later a lithotrite was used, and in 24 minutes another ounce evacuated. The patient did perfectly well, leaving the hospital four days after his last operation "in comfort and cured."

What can better illustrate the beauty of this method than this delivery of 4 ounces of stone in 44 minutes, in safety and comfort to the patient?

No other surgeon so far as I know has operated sufficiently often to make it possible to get accurate information of any value as to the proper amount of débris to be expected for each minute of the operation. Bigelow's first published series[4] gives an average of a little less than three grains for each minute, but these cases were tentative, exploratory, so to speak, developing the method; while in several of them the stone was incrusted upon a foreign body. Moreover, in these operations Professor Bigelow doubtless followed out his own maxim strictly, practising what he preached, that rapid lithotrity should be performed slowly. Undoubtedly his last cases have shown a much higher average.

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[1] Sir H. Thompson. Lancet, Aug. 2, 1879, p. 161.

[2] Lancet, Jan. 17, 1880, p. 79.

[3] Lancet, Jan. 10, 1880, p. 44.

[4] Am. Journ. Med. Sci., Jan. 1878.

Tabulation of Cases.—I have placed the 21 cases upon which this article is based in tabular form.

Case.	Name.	Age.	Physical condition.	Number of sittings.	Time consumed (minutes).	Composition of stone.	Weight when dry (grains).	Result.
1	P. of France.	63¼	Feeble, nervous, large prostate, atonied bladder, healthy kidney.	1	60	Uric acid and urates.	119	Cure; no relapse of stone.
2	L. of Lansingburgh.	60½	Total atony, large rigid prostate, one sacculated, one free stone, sound kidneys.	1	25	Phosphatic.	162	Relief; re-accumulation of phosphates requiring washing on several occasions.
3	J. of Mexico, N. Y.	56½	Weight 230 lbs., albumen and casts in the urine, old and serious valvular heart disease, large prostate.	1	50	Uric acid.	161	Cure; no relapse of stone.
4	H. of New York.	58¼	Feeble in general health.	1	42	“	239	Cure; no relapse of stone.
5	B. of Brooklyn.	46¾	Generally feeble, atony.	1	10	Phosphatic.	81	Cure; no relapse of stone.
6	M. of New Orleans.	63½	Large prostate, fair health.	1	41	“	72	Cure; new formation of phosphates, and new operation after one year.
7	P. of Pittsfield.	57½	Large prostate, atony, feeble.	1	40	“	136	Cure; no relapse of stone.
8	J. of New York.	51½	Large prostate, healthy.	1	60	Urates.	360	Cure; no relapse of stone.
9	C. of Red Hook.	51¾	Large prostate, feeble.	1	35	Phosphatic.	260	Cure; no relapse of stone.
10	McG. of Newark.	54½	Large prostate.	1	30	Urates.	127	Cure; no relapse of stone.
11	H. of Hartford.	56¼	Atony of bladder, feeble.	1	40	Phosphatic.	115	Cure; new formation of phosphates, and new operation in about one year.
12	M. of New Orleans.	64½	Large prostate, fair health.	2	5 5	“ together	80	Cure; no relapse of stone,
13	H. of Poughkeepsie.	73¼	Large prostate, fair health.	1	85	“	630	Cure; no relapse of stone.
14	B. of Poughkeepsie.	66½	Large prostate, fair health.	1	57	Uric acid and urates.	540	Cure; no relapse of stone.
15	W. of Abingdon.	68¼	Large very rigid prostate.	1	42	Uric acid.	80	Cure; no relapse of stone.
16	H. of Hartford.	57	Atony of bladder feeble.	1	20	Phosphatic.	50	One extra washing required.
17	C. of New York.	58½	Large prostate, fair health.	1	45	“	152	Cure; no relapse of stone.
18	S. of Brooklyn.	67½	Albumen and casts, evidence of advanced pyelitis, patient had been bedridden nine months, and was passing catheter 24 times daily.	2	60 60	“	190 30	Death on fourth day after second operation from aggravation of pyelitis and suppression of urine; bladder uninjured at autopsy.
19	L. of Louisville.	68¼	Large prostate.	1	19	“	98	Cure; no relapse of stone.
20	R. of Dubuque.	52	Moderate prostatic enlargement, fair health.	1	95	Uric acid.	495	Cure; no relapse of stone.
21	S. of Tarrytown.	65	Stricture, large prostate, atony.	1	12	Phosphatic.	64	Cure; no relapse of stone.
21	Average age	60	Total number of minutes employed		938	Total No. of grs. Average 4½ grs. to the minute.	4241	Result— 20 cured. 1 death.

By this means the most important points of all the cases are so placed as to be easily compared at a glance. The details of about half these cases have already been given to the profession by Dr. Van Buren in two short articles which appeared in the *Medical Record*,[1] and I have spoken of most of the others, and shown the specimens before the New York Pathological Society.

Many of the features of these cases have been already referred to in the earlier pages of this article, especially the fact that small lithotrites and tubes were used on account of a dread I have always entertained of injuring the urethra. The foundation for this dread has also been plainly given.

I may add that nearly all the cases passed a few grains of débris after the operation, occasionally quite an appreciable angular piece of stone. No case was allowed to go home without a subsequent washing (without ether), and if this wash brought anything away the patient was made to stay over until another wash had proved barren, both in yield of fragments and of the click, indicating the existence of any remaining piece of stone in the bladder. When possible, also, the patient returned to town after several months, and only then, after a final wash, yielding no return, was he pronounced cured. The cases of re-accumulation of phosphates and the fatal case require some special description later.

No fixed time can be set at which a patient will be out after his operation, but in uncomplicated cases the patient is quite certain to be up and out at the end of a week. If a patient comes from out of town, two weeks' stay in the city is generally all that is actually required, although he generally should come back after several months to be washed and receive the assurance that his bladder is empty.

Complications after the Operation.—In the cases I report the complications after operation have been unimportant. In one case (the first) there was a severe chill and subsequent fever lasting several days, and in about one-fourth of the other cases there has been mild chill followed by moderate fever. Temporary retention of urine, requiring the use of a catheter, occurred three or four times, but subsided promptly. No decided atony of the bladder has resulted from any of the operations, such as was sometimes known to follow the old operation. In every case there has been a moderate elevation of temperature lasting from twenty-four hours to several days. The urine is generally more or less bloody for several days after the operation. In good cases this feature is entirely absent. In one case mild epididymitis was set up by the operation. The grade of the existing cystitis was temporarily aggravated in several cases, but this quickly subsided.

Conditions Contraindicating Operation.—I know of no conditions necessarily contraindicating the operation, except hopeless maladies of any kind, distortions of the urethra preventing the use of proper instruments, and possibly large size of a very hard stone. I think that in case of very tight organic (especially traumatic) stricture of the deep urethra, external urethrotomy might be performed, and litholapaxy through the perineum.

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[1] September 28, 1878, p. 241, and March 22, 1879, p. 265.

Among the patients upon whose cases this report is based are found examples of very large and rigid prostate, complete atony, and various grades of chronic cystitis. One case had subacute epididymitis of a week's standing at the moment of operation, but the lithotrity terminated successfully, and the testicle did not suffer from it. Some of the patients had weak lungs, chronic bronchitis and asthma, feeble heart, valvular disease of the heart, great general debility, dyspepsia, etc. Several cases had a moderate amount of pyelitis, and several had urine of light specific gravity containing some albumen and a few casts of the kidney tubules; yet none of these complications have materially interfered with the result, except in Case 18, the fatal one. Indeed this man was known to be desperately and mortally ill before the operation was undertaken, and the risk was accepted knowingly.

Doubtless in cancer of the bladder, pyelitis of any intensity, and where albumen and casts are abundant in the urine, it will be proper to refuse an operation.

Preparation of the Patient for Operation.—This I consider very important. If a patient has atony and his urethra is accustomed to the constant use of a catheter, he is ready for operation at once, so far as local preparatory treatment is concerned, but it is better, if he can spare the time, to put him to bed for a few days, and to wash his bladder with a solution of borax and water, a heaping tablespoonful to the pint, at a temperature above 100° F. This is all the more necessary in case the patient has atony and residual urine but has never used a catheter.

In cases without atony and residual urine previous preparation of the urethra by the occasional passage of a full-sized conical steel sound at appropriate intervals is serviceable but not obligatory. I have operated in both these classes of cases where no instrument had ever passed the urethra save the one searcher which detected the stone, and have done so with the happiest result—no chill, very moderate reaction, patient out of doors in a week. Yet I do not think this precipitancy advisable.

Stricture of the urethra of very large calibre is in my judgment no bar to the operation, and may be disregarded, the size of the tube being regulated by the calibre of the stricture, or the latter when desirable may be dilated previously, or cut; but I think it best not to combine this operation with the litholapaxy where it may be avoided. All strictures within the first inch from the meatus, however, may as well be disregarded and cut to a fair size at the time of operation along with the meatus. The meatus when small, and the congenital band of narrowing so often found just within it, should always be cut at the time of operation, since this little incision adds no risk to the operation, and lends a few sizes to the tube which may be safely introduced.

In the healthy urethra the second point of physiological narrowing at about the third inch should regulate the size of the evacuating tube to be used. I do not think that this point should be cut.

Rest in bed two or three days before the operation I think is always desirable, and when the bladder is much irritated or inflamed, whether it be atonied and undergoing a course of washing or not, the free use of Bathesda or Poland water, or of some bland diuretic for a few days before the operation is of unquestionable advantage.

If the urine be reasonably bright and clear, but over-acid and concentrated, a little citrate of potash for a few days before the operation corrects it. Milk diet is useful. I am in the habit of ordering ten grains of quinia to be given two hours before the operation, and ten minims of Magendie's solution of morphia subcutaneously just before giving the ether.

The Operation.—The details of operative procedure, as at present practised by Dr. Van Buren and myself, are the following:—

If the bed is a high one, and the mattress solid, I prefer to leave the patient flat on his back, on the right-hand side of his bed, with something under him to keep the sheet dry. If the bed is not suitable a table should be used. Two assistants only are necessary—one for the ether, one for the washing bottle; and one assistant can sometimes do all the work. I have operated promptly and successfully (without ether) in my office without any assistant, and several times with ether, having only one assistant. If the patient takes ether badly, two more assistants may be desirable to hold the legs apart.

I first test the calibre of the urethra with a steel sound to find what size of washing tube should be used, incising the meatus if it be small.

If the urine has been reasonably clear and acid, the lithotrite is introduced at once, regardless of the quantity of fluid in the bladder, unless the stone be exceptionally large, when a little water may be thrown in as a first step. If the urine has been ammoniacal and putrid, it is first entirely drawn off, and the bladder repeatedly washed with a saturated solution of borax and hot water, about a full drachm to the ounce,[1] in the washing bottle until the wash comes away sweet. I formerly used a one per cent. solution of carbolic acid, but I prefer the concentrated solution of borax, which is a better disinfectant and anti-zymotic at that strength, and quite soothing to the bladder instead of irritating, as is an efficient strength of carbolic acid.

In the fatal case I used carbolic acid, but was unable to get the wash sweet. Indeed, after the end of the hour of operating, the last wash had a slightly putrid smell, due doubtless to the admixture of a few drops of urine from the diseased kidneys.

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[1] At 110° F. a saturated solution of borax is 1 in 6 = ʒiss in ℥j.

I find it most satisfactory to crush rapidly from six to ten times, according to the size of the seizures, then to wash until the débris ceases to fall into the receiver, and immediately re-introduce the lithotrite, while the assistant empties the receiver, and refills the bottle. Generally before the bottle is again ready enough stone has been fragmented to require another washing.

For catching the stone the ordinary manœuvres practised in old lithotrity still hold good. With my instrument I am in the habit of seizing and crushing a fragment at any part of the sides or base of the bladder, wherever I can pick it up, even with the beak reversed, so confident do I feel that the instrument is not apt to catch the bladder. I catch the button, throwing on the screw movement with any finger of either hand, whichever one happens to be nearest, and with the first gentle turn of the screw in crushing I likewise rotate the whole instrument, or draw it forward. In this way I should become aware at the very commencement if a portion of the bladder wall had been picked up along with the fragment; but I do not rely upon this test, for I think it easy, in most instances, to distinguish at once when a prominent, outstanding trabecule on the side or base of the bladder has been caught, by the peculiar, soft, elastic feel of the bite of the jaws as they are carefully brought together. In such case the instrument is rotated, and care exercised when exploring in the same quarter again.

In brief I believe the best results in the operation likely to be attained by the use of small, strong lithotrites which cannot clog, and will not readily catch the bladder, perfect purification of the bladder at the start, if the urine has been ammoniacal, short crushings, and frequent washings.

After Treatment.—I think it well in all cases where the urine has been decomposed before the operation to pass the catheter on the evening after the operation, and wash the bladder with a hot, saturated solution of borax at 103° F., and to repeat these washings twice daily, reducing the amount of borax after twenty-four hours. A heaping tablespoonful of borax weighs about seven drachms (ʒvij), and this, in a half pint of water, is near enough the required strength to begin with, later the same quantity may be used in a pint of water. Occasionally this solution irritates, but in most of the cases upon which I have thus far tried it the effect has been excellent. My experience as yet is small.

A rubber bottle containing a layer of hot water placed over the lower part of the abdomen gives much comfort after the operation. Bathesda water should be continued in all cases of ammoniacal urine or much irritation. Opium, nitre, aconite, quinia, laxatives, etc., as required. A milk diet is soothing, but most patients do not like it.

Special Manœuvre to catch the Stone.—I have only one manœuvre to describe which I believe to be new. In one case the bladder was pouched toward one ureter. In this pouch the stone rested; but I knew it not to be encysted, since I had felt it on one occasion on the other side of the bladder, and at the time of the operation could pass the end of the closed lithotrite all around it; yet I could not seize it. I tried with several instruments, with the bladder full, and empty, but in vain. I turned the patient on his side with a full bladder, but the stone would not roll out. Finally I distended the bladder fully, rolled the patient upon his opposite side, introduced a searcher, hooked the beak around the stone, and dislodged it from its pouch. I then easily caught it on the other side of the bladder, keeping the patient upon his side; but I lost thirteen minutes in the operation in fruitless efforts to catch the stone in its old position. By keeping this patient upon his side with the bladder full, I finished his operation, although not very comfortably.

Last Fragments.—A most important feature in the new operation is its value as a detector of small stones and fragments. I have on several occasions found a small fragment with the washer when I failed absolutely to detect it with the sound. Occasionally the washer will fail to find a stone which the searcher can discover, as in the case to be narrated presently under the head of re-accumulation of phosphates. The washer will also fail to detect fragments which lie in a deep pouch toward one ureter, or behind a prostate, or in a sacculus, unless the stream of water be directed upon them as they lie—therefore the manœuvre of turning the patient upon his side in the final washing, while the bladder is distended, is a valuable one. With it I have caught fragments which escaped washing for a considerable time when the patient was upon his back.

In order to wash effectively for a last fragment it is absolutely necessary that no air should be in the bladder. A few bubbles will churn up to such an extent that there can be no certainty whether the click of a small fragment against the tube is real or imaginary. I have been unable, with Professor Bigelow's bottle, to couple with sufficient accuracy to avoid leakage of a minute quantity of air as a rule; and although this is a matter of no importance in many cases, sometimes it is all-important. I refer to Bigelow's old washer. I learn that he is devising another. If this new one has the water bulb above the level of the joint where the tube couples the air problem will be at rest, otherwise I think it will not be.[1]

I have used Thompson's washing bottles exclusively in all my later operations, and find them perfectly efficient, very convenient, and entirely easy to use in such a manner that no air can enter the bladder. If a little does get in it comes out again through the tube and collects at the top of the bulb, where it does not make any churning noise.

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[1] I have just seen (March 3d) Professor Bigelow's description of his new washer in the *Boston Medical and Surgical Journal*, Jan. 8, 1880, p. 30. It has an air-trap in the top of the bulb. It is evidently a great improvement upon the first washer. Its stopcock and air trap render it capable of being used without wetting the bed or allowing air to enter the bladder; while an extra tube allows the operator to expel air from the bulb, should it by chance get in, and change the amount of water in the bladder at will, without uncoupling. Professor Bigelow writes me that it has proved satisfactory in all respects.

While the water is swashing backward and forward in the bladder, without air, if the surgeon or assistant places his ear over the bladder upon the abdomen he can hear the rush of the water perfectly, and detect the slightest click made by the contact of a minute portion of stone against the tube. When these clicks finally cease, or are so mild that they seem to be caused by very fine particles, the washing may be terminated with a certainty that no fragment of any importance remains.

The dull thud of the bladder wall drawn against the end of the tube when held in certain positions, the sharp click sometimes caused in the same manner, and the flutter of the bladder wall against the orifice in the tube are sounds with which the operator soon becomes familiar, and which he need never mistake for the sharp click of a stone.

A radical cure depends upon the thoroughness of the final test wash, which the operator should always make when the soreness has left the bladder before sending the patient off as cured. The wash should be repeated after a few months, when practicable, to confirm the certainty of cure.

Re-accumulation of Phosphates.—Cases II., VI. and XII., XI. and XVI., belong in this group.

CASE II. has already been alluded to in the earlier pages of this article, as the patient whose bladder was lightly pinched during old-fashioned lithotrity, who was relieved by rapid lithotrity, and then, after several washes without ether, had his urethra over-distended, and nearly died of cystitis. I have washed him since, and again found a small, smooth, round phosphatic stone about the size of a pea.

I now washed this patient carefully and thoroughly under ether. I used the Thompson bulb, and not the most minute bubble of air was allowed to enter the bladder. The thin atonied bladder readily received the whole of the contents of the bulb, and the swash of the fluid was very evident to the ear laid upon the thin walls of the abdomen. The tube was turned in all possible directions, and Dr. Stimson's ear brought to my aid; but no click announced the existence of any further stone.

I had formerly relied so thoroughly upon this test to decide that there was no stone in the bladder, that I was about to desist, when I concluded to search the fully distended bladder with the ordinary Thompson's searcher. This I did most exhaustively, and finally I succeeded in inserting the beak of the sound into a hole in the bladder-wall on the patient's left side at the base. Here I found a stone which I judged to be nearly an inch in diameter. I attempted to dislodge it, but failed. I withdrew the beak of the sound, and, by a little care, was able to re-insert it at will into the hole, and again demonstrate the encysted stone to Dr. Stimson.

When the patient came out of his ether I proposed the supra-pubic operation. This he declined. He has been very comfortable for some months past, and doubtless will so continue until another phosphatic bud forms, and breaks off so as to be free in the bladder. Then he will doubtless have another access of tenesmus and irritation until the little free stone is again washed out.

In a case like this, re-accumulation of phosphates is easy to understand.

Another cause for the re-accumulation of phosphates is the existence of chronic (especially phosphatic calculous) pyelitis. This is demonstrated by my fatal case, which is described under the sub-head Mortality.

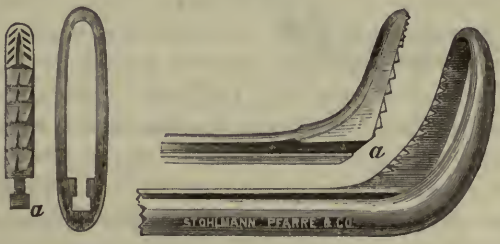
Finally, perhaps, the most frequent cause for re-accumulation of phosphates is persistence of prostatic enlargement, chronic cystitis, atony, etc., and lack of intelligent care on the part of the patient in washing out his bladder.

A certain number of cases suffer from this re-accumulation. M., of New Orleans (Case VI.), and H., of Hartford, are instances in the foregoing list. Both were certainly relieved by rapid lithotrity, and both required a new operation for a new soft formation of small size after about a year. Both are now well so far as known. One has passed the summer in Europe, and both take the best of care to wash their bladders thoroughly. Thus far I have had no relapse in a case from which I had removed an acid stone.

Instruments.—Professor Bigelow's lithotrite is strong, effective, but open to the criticism that it is needlessly large[1] for stones as they are generally encountered, and that neither the catch for the screw on the outside by the wrist motion, nor the ball handle, seem to me adapted to the performance of as quick work as the button catch and wheel of the old instrument. This may be a notion on my part, due to being accustomed to handle the old instrument. Sir Henry Thompson's lithotrite, which I have seen, is solid, small, effective. He states that it does not clog Had I possessed it, I might have saved much time in searching for a small, light instrument which would not clog. As I did not possess one, I set about to construct such an instrument, and reported progress in the *Medical Record*, May 18, 1878, page 388. I am still modifying my instrument. I am satisfied with it so far as my working with it is concerned, but I am not willing to indorse it for general use until I have tried a few more changes in the manner of roughening the sole of the male blade, so that it shall have the greatest prehensile power with the least sharpening of the points.

I make, therefore, this as a second report of progress.

Fig. 1.



The two cuts (Fig. 1) show the instrument, but they do not strictly represent it. They are supposed to be absolute representations of natural size, but no one could imagine from the rear view of the female blade at the heel, and the three-quarter view of the same blade at the same spot, that these cuts represent the same instrument. The female three-quarter view is much too broad. The rear view of the two blades is quite accurate. The features of the instrument are the smallness of the male compared with the female blade, the antero-posterior diameter of the jaws of the male and female blades at the heel; the breadth of the shoulder at *a*, and its continuance to the very end of the male blade, as shown by the hole at the bottom of the rear view of the female blade. This feature of the instrument insures great strength of action, and prevents the male blade from springing, an accident which once happened to me with one of Weiss's instruments in a case of old-fashioned lithotrity, where the stone was quite large, and very hard. The picture also, in the three-quarter view, gives too much of a curve to the female blade, and makes the whole instrument look clumsy, while the male blade is shorter and narrower than natural.

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[1] Prof. Bigelow writes me that a small instrument of his design is manufactured.

As made by Tiemann, I do not find the instrument at all clumsy. It is light and strong, only catches the bladder with difficulty, and then does not cut it if the operator recognizes what he has in the bite of the instrument. It has done reasonably quick work, and will crush a piece of brick an inch and a half in diameter without springing. The dimensions are: size of shaft, 18 French (10 English); of heel of jaws, 24 French (14 English); length of jaws, 1 inch. I have a larger model, which crushes pieces of brick two and a quarter inches in diameter. This I have used in the bladder. Its dimensions are a little greater than those given above. I personally prefer a fenestrated instrument. Coulson has expressed a similar preference.[1] Other operators, so far as I know, prefer an instrument with a solid back.

I had the misfortune, in 1878, in describing the jaws of my instrument in the *Medical Record*, to state that I thought the lithotrite of Professor Bigelow "must sometimes clog." I regret this hasty assumption. The only cases of impaction reported seem to prove that a faulty construction of the instrument has been to blame. The obvious conclusion is, that instrument-makers must give more care to their work, if the instrument is to be what its author desires it to be. In Dr. Wynkoop's case, in which Bigelow's lithotrite did clog badly, the fault was in the workmanship of the screw in the handles, I am told; and in Dr. Stein's case, at Charity Hospital, where it clogged, the doctor does not seem to have considered it necessary to try to free the jaws. He writes me relative to the case: "I used Bigelow's lithotrite made by Tiemann & Co. There was some clogging of the jaws of the instrument, because the stone (phosphate) was soft; nevertheless, there was no trouble or inconvenience caused thereby."

In this case, 220 grains were removed in twenty-five minutes, and all went well. As at present constructed, I do not well see how Professor Bigelow's lithotrite can clog. Dr. Weir, in his recent article,[2] states that with Bigelow's lithotrite, "a tendency to impaction was noticed in two instances, but when the lithotrite was withdrawn, it was ascertained to be due to the slot in the shoe or female blade not corresponding with the termination of the groove between the two shanks of the instrument."

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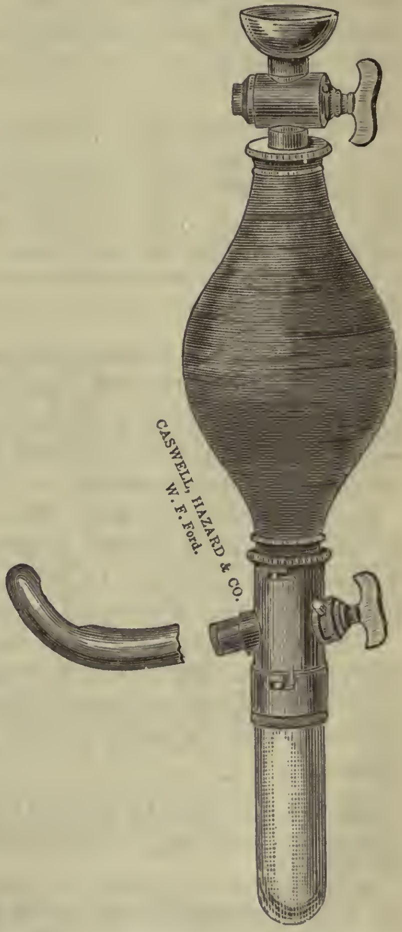
[1] Lancet, January 31, 1880, p. 163.

[2] Am. Journ. Med. Sci., Jan. 1880.

I have had the wheel made larger in the handle of my lithotrite than in the older instrument, and the button higher, so that it may be caught easily by any finger of either hand in any position, thus promptly throwing the screw power into action.

Among the three washing bottles in the market, I have no hesitation in prefering Thompson's last. I do not like the glass sphere however, because the fragments cannot be seen to fall into it when the wash becomes tinged with blood as readily as they can in the glass tube which was attached to the first Thompson washer. I have therefore had the tube as upon the old washer, attached to the new one in place of the sphere, and have cut off the funnel-shaped valve. (Fig. 2.) The fragments are stirred up in the tube by each compression of the bulb but the instrument works very effectively, and as soon as fragments are seen to cease to fall, the tube is withdrawn.

Fig. 2.



In using this instrument, I introduce the tube to the membranous urethra, then couple, turn on the stopcock, and make a very slight compression of the bulb. The air immediately mounts up into the bulb with a gurgling sound and now, confident that the tube is absolutely full of water, I enter the bladder and proceed with the washing.

The sudden distension of the bladder produced by pressing the bulb causes pain. The patient, although under the influence of ether, always winces a little as the water rushes in. I have never seen any ill result from this cause however, but am inclined to treat the bladder more gently in sensitive cases than in others.

Statistics and Mortality.—The total number of operations performed up to this date, Feb. 15, 1880, so far as I am aware is as follows:—

	No. of Operations.	Fatal.
Bigelow	21	1
Thompson	31	0
Van Buren and Keyes	21	1
Cadge	5	0
Coulson	4	0
Curtis	3	0
Weir	4	2
G. Buckston Brown	3	0
Thos. Smith	2	0
Wynkoop	2	1
Sands	2	0
Fox	1	1
Peters	1	0
Allen	1	0
McBurney	1	0
Hutchison	1	0
Stein	1	0
Wilmarth	1	0
Orth	2	0
Total	107	6

Average 1 death in 18 cases (about). This is an excellent showing, especially as nearly all the deaths happened in patients who were far from healthy at the time of the operation. Bigelow's patient was 66 years old and died on the sixth day with moderate meteorism, but little tenderness, and (unfortunately) no autopsy.

Fox's case was an old man. He died on the sixth day. His bladder had ulcerated at one spot, but it was believed not to be due to injury at the time of the operation. He had pelvic peritonitis, and surgical kidney. He died comatose. I examined the specimens when fresh.

Wynkoop's case, aged 55, died twenty-nine hours after the operation with peritonitis. His kidneys were large, congested, soft.

Weir's four operations were done upon two patients, both of whom unfortunately died, but neither of them, I think, directly as a result of the operation.

The first case, aged 73, did well for a week, when he had a chill with symptoms of renal colic, and after further chills he died four weeks after the operation.

At the autopsy his bladder was found sound, and free from stone. The left ureter contained several calculi high up. The kidney was broken down with abscesses, one of which communicated with the peri-nephritic tissue. Here the impacted kidney stones, in the feeble state of the patient's health, undoubtedly originated the abscesses which caused death.

The second case, aged 65, constitutes the Cases III. and IV. of Dr. Weir's article in this Journal already referred to. These were separate operations done upon the patient at an interval of fifteen weeks. From each of these the patient rallied reasonably well. Six months later, at a third and final operation, more stone was obtained. On the eighth day vomiting came on, and death on the ninth day following.

At the autopsy, enormous median hypertrophy was found, 1½ inch in diameter. The bladder was not injured, and contained two fragments of stone, each one half an inch long. Both kidneys were filled with calculi. In the right were fifteen, varying in size from a hazelnut to a small egg, composed of phosphates and oxalate of lime. The cortical structure of the right kidney was almost totally destroyed. In one place a calculus had pierced the outer surface. The left kidney had more cortical substance upon it. The pelves of both kidneys contained much bloody pus.

It is hard to understand, not why this patient died, but how he lived long enough even to apply for the first operation. I saw the kidneys when they were presented along with the specimens from my fatal case before the New York Surgical Society.

My own fatal case (No. XVIII. of the table), is briefly as follows:—

Case XVIII, age 67½. Prostatic enlargement and bladder disease of many years standing. Patient had been confined to his bed for nine months, thinned to a shadow, using small quantities of opium, and passing a soft catheter when I saw him, once an hour, night and day. His pain was intense, and nearly constant. His urine decomposed, very offensive, of very light specific gravity, contained casts and albumen. The kidney region was tender on pressure.

Pyelitis and Bright's disease were diagnosticated, but at the patient's request an effort was made to relieve him of his stone and his pain.

The bladder was pouched (as proved at the autopsy), and very difficult to manage. An hour's diligent work only obtained one hundred and ninety grains. I then closed the sitting on account of the patient's feeble condition. He had no chill or reaction, but continued in as much pain as before, eating less and passing more pus than before the operation.

To get away the remaining fragment, although the general condition was desperate, I operated again in eighteen days; worked an hour again before getting away the last fragment. The pain increased, the pus increased, the urine diminished, fever and nausea came on with a chill, and finally on the fifth day after the operation the patient died.

At the *autopsy* the prostate was found large but uncongested. Urethra healthy. Bladder pouched, but entirely uninjured. Its surface was of a pale blue-white, containing no ecchymotic spots, no lacerations or abrasions, but uniformly smooth and shining, free from stone.

Both ureters were dilated, both kidney pelves were distended and contained about two ounces each of thick green pus with flakes of phosphatic calculous matter. The secreting substance of both kidneys was altered, atrophied, the organs small, the seat of chronic interstitial and parenchymatous changes.

It is wonderful that the patient lived so long as he did.

A mortality of 1 in 18 is good to start with, especially when the operators are so numerous; and the showing is still better for the new operation when the condition of the individuals who died is explained. Two of them stood this operation, one on two occasions, one once, when they probably would have died under any other method promptly, if there is any value in post-mortem signs, and one of the others (Weir's first case) came to his death from causes apparently entirely separate from the operation.

What should be the Limit of Time occupied in a single Sitting.— Thompson allows thirty minutes as the limit to which he would be willing to push an operation, but in that time this veteran lithotritist could doubtless do as much work as another in an hour. I do not know that Bigelow adopts any limit. I have adopted none, but propose to operate as promptly as possible, and in a general way to accept one hour as the limit at which the sitting must close. If the patient's condition is good, however, and he bears the ether well, I think it would be better to prolong the sitting another half hour, rather than to leave angular fragments of any considerable size in the bladder.

If anything is left, it should be removed by a second sitting under ether, as soon as the patient has generally rallied from his first operation. It is not necessary to wait for cystitis to subside. On this point, the time for a sitting, wider experience from numerous operators will eventually establish a rule.

1 PARK AVENUE, NEW YORK CITY, February 15, 1880.

ARTICLE V.

REPORT OF A CASE WHERE MOTHER AND CHILD DIED DURING LABOUR, FROM DIFFICULTIES ATTRIBUTED TO SHORTNESS OF THE PEDICLE, SECURED BY A CLAMP, IN OVARIOTOMY. By WALTER F. ATLEE, M.D., of Philadelphia.

IN June, 1875, I operated upon Miss H., aged 33 years, of Mount Holly, N. J., for ovariotomy, removing an ordinary cystic colloid of the left ovary (cystoma ovarii), about nine pounds in weight. The loculi of which the tumour was composed were small, the largest scarcely exceeding an inch in diameter, and it was necessary to remove it as a solid mass. The incision was a long one, extending one inch above the umbilicus. The pedicle was very short, and the clamp used was very near the left horn of the womb—indeed, it seemed to touch it. Recovery was rapid; the patient came down stairs, and walked in the open air on the sixteenth day of the operation.

I saw this patient now and then afterwards, but never heard any complaint from her except about menstruating through the pedicle, and one of her letters was so interesting on this subject that I communicated it to this Journal (in July, 1877, p. 288). In this communication it is said: "One small place about the centre of the scar, left by the clamp, has never entirely healed; it has the appearance of a pimple, which has increased in size, and always has a bright red colour." Miss H. married one year after this operation, and on June 19, 1879, she called at my office to know whether she was pregnant or not, her menses having ceased since April. I thought her then to be pregnant, and told her she would have her child about the 18th of February. She asked me then to promise to go to her assistance at the time of her confinement, should I be sent for. In December, as I am informed at the present time, she asked for advice on account of severe pain at the point of attachment of the pedicle to the cicatrix.

On Monday, the 16th February (1880), her husband brought me the following note from Dr. Stokes, the highly esteemed physician who was her medical attendant at her then residence, near East Moorestown, N. J.: "I was called to see Mrs. P. on Thursday evening. Found her with preliminary labour-pains; but it was not until early Sunday morning that I could detect any dilatation of the os. At this writing (6 A. M.) it has dilated to the size of a silver quarter-dollar; lips thick, and somewhat rigid, with very inefficient pains; indeed, the expulsive pains are mere nothing. The patient keeps up her strength well by beef-tea and milk, and sleeps at intervals. I have kept her bowels open with enemas, and have also used an opiate enema. I felt best satisfied to give thee a short account of the case, and if thee thinks well to make any suggestions, or to come up, we should be glad to see thee."

I arrived at the country house of the patient about six o'clock in the evening. She was then much exhausted and despondent; her pulse was very frequent, some 130 pulsations to the minute. The dilating pains were frequent and severe. I was told that no waters had been discharged. The back of the child was felt to be against the front of the womb, inclining from the left side toward the right. The mouth of the womb, to the touch, had not changed since the morning. The finger came in direct contact with the scalp of the child. Notwithstanding what was said about the discharge of water, no projecting membranes could be felt, nor was there observed, *at any time*, any flow of what might be amniotic liquid, until after the application of the forceps, and strenuous and repeated efforts to extract the child.

I endeavoured through the whole night to effect dilatation of the mouth as quickly as possible, having, however, only my fingers to work with. The left front part of the mouth seemed to open more slowly than the rest, remaining during the contractions thicker, rounded, and less tense. In the course of the night I gave twelve grains of quinia, beef-tea, and milk with brandy; and in the early part, to try to act upon the irregularity of the pains, an enema of laudanum. At six o'clock on Tuesday morning I sent for Dr. Stokes—unfortunately I did not have my own instruments—and we proceeded to apply the instruments at once on his arrival, some half hour afterwards. The patient was then much exhausted, and complaining greatly of pain, but without having at any time any expulsive pain. There was no impulsion given to the fœtus; the parts presenting did not push forwards. They may have seemed to advance a little, but the progressive movement bore no relation to the amount of pain, and did not continue, while the pain did. The child's occiput was in the hollow of the sacrum, turned towards the left side; the child's body was back forwards; its right side more forwards than the left. The child's occiput was easily turned forwards, but returned to its old position immediately, before the forceps could be applied. The position of the body we could not change by manipulation. When the forceps were adjusted to the head in the position it occupied, we could not make the head advance. We tried to assist labour by the vectis, which, with forceps, were all the instruments in our possession, and all that could be had in the neighbourhood. The child was dead, and the patient too much exhausted to survive the Cæsarean operation. During these fruitless attempts to deliver, the patient lost, I should think, some forty ounces of blood; she grew weaker and weaker, and died at 10 o'clock. Ether was given by inhalation while the instruments were being used—about twelve ounces were consumed.

On Wednesday afternoon, the day after her death, Dr. Stokes and myself, with my learned confière, Dr. Harris, made a post-mortem examination of this unhappy case. The abdomen was opened by an incision to the left of the old cicatrix, which measured eight and a half inches in length. At the lower extremity of the cicatrix the womb was fast to the wall by a pedicle, so short that it could scarcely be pinched between the thumb and forefinger. There was not a drop of blood in the cavity of the abdomen. The womb cut open in front, the child was seen covered by meconium, the back forwards, the right side rather more than the left. The occiput, in place of being under the pubis, was in the hollow of the sacrum; all as was diagnosticated during life. The placenta, which was attached to the fundus, seemed to be partially detached at its upper edge, and was very easily peeled off. The child, a female, weighed eight and a half pounds.

I think, myself, that the difficulty in this case arose from the irregularity of the contractions in a deformed womb. The left horn being fast to the abdominal wall at the lower end of the old cicatrix, which was just above the pubis, the womb, as it developed around the child, must have done so in a very different way from what occurs in ordinary cases. As it is, I have thought it well to report the case as bearing upon the question of the proper mode of securing the pedicle, when very short, in ovariotomy, and I leave aside any discussion of the proper way, in the future, of dealing with any similar case of pregnancy and labour. Whatever judgment be passed upon this unfortunate case in this latter respect, the reporter can, at least, make this reflection: *bene facit qui ex erroribus suis exemplum aliis præbet.*

ARTICLE VI.

NOTES OF THREE CASES OF SEVERE INJURY TO THE EYE TREATED ALMOST EXCLUSIVELY BY REST.

By G. W. MURDOCK, M.D., Surgeon to West Point Foundry.

CASE I.—Mrs. T. O., aged 50, sustained a serious injury to left eye, March 30, 1879, by getting into it a quantity of a strong alkali—an impure carbonate of potash used in washing. I saw her twenty minutes after it occurred. The salt had then nearly all been removed or had deliquesced. The eye was very painful, and already much injected. A large surface of sclerotic at the inner angle was blackened or charred, and the cornea was lustreless and shrivelled.

Following the plan suggested by Mr. Hilton, in his "Rest and Pain," I first carefully washed out the eye, then instilled olive oil freely, and to secure absolute rest to the injured eye, applied with the utmost care, cotton-wool compresses and a bandage both to this and the uninjured one. I then gave a single dose of morphia gr. $\frac{1}{8}$, to relieve the immediate pain, which was the only medication required during the entire treatment. Within an hour she was entirely easy, and remained so. Upon the following morning, I readjusted the compresses, but as there was no pain or discomfort in the eye, it was thought best not to open it.

Upon the fourth day after the injury, I opened the eye for the first time, and found its condition better than my best expectations, the cornea being clear and bright, and the conjunctiva almost normal, outside of the blackened area. The compresses were readjusted, and left undisturbed for two days. Up to this time she had been free from pain, and the eye was in such good condition, that I thought it safe to unbandage the well one and did so. The result was, that although she remained perfectly quiet in a darkened room, and without attempting to use the eye, yet within an hour the injured one began to be painful, and she suffered so much during the night, that at my morning visit, she begged me to replace the other bandage. I did so, with the effect of giving her speedy relief.

I give these details, in order to emphasize the point, that to be successful in this treatment, it is essential that the uninjured eye should be bandaged with as much care as the other, and rendered motionless.

In this case, both bandages were then retained until April 12th, fourteen days after the accident, when the left eye seemed quite restored, and all dressings were removed. The injury left no trace except a trifling amount of entropion.

CASE II.—I. L., aged 55, blacksmith, was injured in West Point Foundry, September 26th, 1879, by a bit of red-hot iron, about the size of a large grain of wheat, which struck the right eye, and partly imbedded itself at the inner margin of the cornea. The piece of iron was removed in the shop, and he was seen, half an hour later, by my assistant Dr. W. A Jayne, and myself. The eye was at this time very painful and greatly congested. Upon examination we found a charred depression three lines long by one and a half wide, extending horizontally across the margin of the cornea, and so deep that we feared it might involve its whole thickness. The heat had also destroyed the superficial layers of the cornea over a much larger surface, so that it was white and opaque up to a point just beyond the centre of the pupil. The injury seemed in all ways so serious that we believed at the time that there was little chance of preserving any degree of eyesight for him, and it was with some misgivings that I determined to try the method of treatment detailed in the preceding case.

By my direction, Dr. Jayne instilled a solution of atropia (gr. iij–℥j), followed shortly by olive oil, and then applied carefully graduated cotton compresses and bandages to both eyes. A small amount of morphia was given during the first two or three hours, when the pain subsided, and he remained absolutely free from it during the whole subsequent treatment, with the exception of a few hours which will be mentioned later. The dressings remained undisturbed until the next day, when, upon removing them, I found the eye much less congested, and looking in all ways better than I had dared to expect. Having repeated the instillation of atropia and olive oil, I immediately reapplied the compress and bandage as before, which were not disturbed again for twenty-four hours.

This treatment was continued without variation, and with most gratifying results. The cornea remained perfectly free from inflammation or cloudiness, beyond the margin of the burned surface, and the superficial ulceration over this area filled up rapidly. No medicines were given, and no other applications made than those mentioned. The patient was given the liberty of the house, from the first day, but not allowed to expose himself to the heat of the sun.

At the end of two weeks, an attempt was made to leave off the bandages, the patient remaining in a darkened room. Within a few hours, however, the eye began to be so painful, that the dressings were reapplied, with the effect of giving immediate and permanent relief. At the end of the third week, the bandage was removed from the uninjured eye, and he was allowed to go about as he liked. At the end of the fifth week all dressings were removed, and he returned to his forge. The condition of the eye at that time was noted as follows. A shallow excavation, one line in breadth by one and a half in length, marks the point of injury. A slight haziness extends from this to the centre of the pupil. The remainder of the cornea is perfectly clear; no congestion of cornea or conjunctiva; can see even small objects readily, and with sufficient distinctness for all ordinary purposes.

Case III.—C. P., farmer, aged 40, injured, October 22, 1879, by premature explosion of a blast. The charge was of gunpowder, and was received squarely in the face and eyes. Both membranæ tympani were ruptured by the explosion, and his face was as black as a negro's. The right eye suffered most severely, receiving a large number of grains which were imbedded in the cornea and conjunctiva. The cornea was almost literally covered with powder. It was perforated at one point, and a portion of the aqueous had escaped. There was even uncertainty whether grains had not penetrated to the interior of the ball. The left eye had eight or ten grains in the cornea, and as many more in the conjunctiva at either angle. I did not see the case until nearly three hours after the injury; then having given ether, with the assistance of my associate, Dr. Jayne, I picked out as many grains as possible, under the circumstances, and in the excessively poor light where I was compelled to work. The left eye was well freed from them, but it proved impossible to extract all from the right. Here the flaccid condition of the cornea, from escape of aqueous, added greatly to the difficulty, and some grains also, were too deeply imbedded to be removed with safety. The condition of this eye was so bad, that we had little hope of saving any useful sight in it, and frankly told this to the patient. We were informed, however, that the eye had been injured years before by a blow from a whip, so that vision was quite imperfect with it before the present accident, which made the loss now threatening of less importance.

Atropia solution was now instilled, followed by olive oil, and both eyes very carefully bandaged over compresses of absorbent cotton, and kept perfectly at rest. These dressings were changed upon the following day. He was very comfortable, and had taken but a single dose of morphia. Both eyes doing remarkably well. Atropia solution and olive oil applied to right eye, but only oil to the left, as pupil was well dilated. No more atropia was required in the left eye, and it was only used in the right during the first ten days.

The compresses were now reapplied as before and left for another twenty-four hours. This treatment was continued throughout the case without variation, and the results surpassed our most sanguine expectations. No inflammation occurred, and there was no pain from the first hour or two after they were dressed.

The left eye was quite well in four or five days, but for the sake of controlling motion in the right, the bandage was continued upon both until the twenty-first day. After that, it was kept upon the right eye only, with very light compression, until the twenty-eighth day, when it was removed altogether.

At this date, December 1st, 1872, I note as follows. The eye is free from congestion; cornea clear and bright, except that, at five or six points, there are powder stains, or small grains of unburned powder deeply imbedded. These seem to be doing little harm, and it is not thought best to disturb them. The eye is rapidly becoming accustomed to light, and giving no trouble. Vision is good enough for any ordinary employment; quite as good as before the accident. The patient insists that it is better than before, but he is quite certainly mistaken.

I present these cases on account of the severity of the accidents, and the material variation in treatment, from that most commonly recommended. They would seem to illustrate well the virtue that there is in putting a wounded eye perfectly at rest, both to restrain inflammation, and to prevent corneal opacity, which friction certainly tends greatly to induce.

Cold Spring, N. Y., Jan. 1880.

Article VII.

Three Cases of Syphilitic Muscular Contraction.

By Arthur Van Harlingen, M.D., Chief of the Skin Clinic, Hospital of the University of Pennsylvania.

Although, as is known, no structure of the body is exempt from the influence of the syphilitic poison, yet the muscular tissues are among those most rarely attacked, and cases of muscular syphilis are not often recorded in medical literature. For our knowledge of these affections we are indebted to various French writers, notably Notta,[1] Buisson,[2] Fournier,[3] and Mauriac.[4] Virchow has also written upon the subject in his treatise on constitutional syphilis.

Formerly all varieties of muscular syphilis were believed to be of tertiary origin, but it is now known that lesions of the muscles may occur at any period of the evolution of the disease. The later manifestations belong usually to the category of gummata, the earlier are divided by Fournier into (1), muscular pain or myosalgia; (2), muscular contraction; (3), muscular debility; (4), muscular atrophy; (5), tremor. The cases I am about to describe belong to the earlier lesions of syphilis, and are included under Fournier's second class. They are as follows:—

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[1] Archives Gén. de Méd., Dec. 1850, 4e série, t. xxiv. p. 413.

[2] Gaz. Méd. de Paris, 1846, p. 211, and Tribut à la Chir. Moderne, t. 1, 1858, p. 527.

[3] Leçons sur la Syphilis, Paris, 1873, p. 718.

[4] Leçons sur les Myopathies Syphilitiques, Paris, 1878.

CASE I.—Mrs. A. H., coloured, 25 years of age, and the mother of a healthy child of two years, suffered with some suspicious sores about the genitalia in November, 1877. She presented herself for treatment at the Dispensary for Skin Diseases, in April, 1878. At that time she showed a scattered papular syphiloderm about the thighs and over the face, together with mucous patches of the mouth and vulva. She was ordered a quarter of a grain of the protiodide of mercury thrice daily with a local application; under this treatment the various lesions gradually disappeared, and the patient did well until the early part of June, 1878. About this time she began to complain of gradually increasing difficulty of movement in the right arm, motion at the elbow-joint, particularly extension, becoming slowly more and more impaired, and giving rise to pain referred to the outer condyle of the ulna, and to the insertion of the biceps. Severe pain was also experienced for a time in the right ankle-joint, and later in the knee, but this soon passed away spontaneously. On examination the patient, who was pregnant, was found in fair general health, with no symptoms of dermatosyphilis. There was general muscular soreness with some stiff neck; excepting occasional pain in the ankle and knee there was no joint trouble. The only complaint was with regard to the right arm, which hung in a partially flexed position without giving any pain excepting when flexed or extended beyond a certain point. Extension beyond an angle of 150° was impossible on account of what seemed to be a shortening of the biceps. Any attempt to make extension beyond the limit mentioned was met by a sudden check, accompanied by pain, referred to the point of insertion of the tendon of the biceps into the ulna. The forearm could be almost, but not quite, completely flexed upon the arm. The attempt at complete flexion aroused some pain, referred to the insertion of the tendon of the triceps into the outer condyle of the humerus, and extending for a short distance up the arm. There was some slight sensitiveness to pressure in the muscular structure of both biceps and triceps, the tendinous extension of these muscles being still more sensitive. Close examination of the elbow-joint, the bursa of the tendon of the biceps, the skin and the connective tissue about the elbow, showed these to be quite normal.

Iodide of potassium in the dose of ten grains thrice daily was substituted for the mercury, and later $\frac{1}{24}$ grain corrosive sublimate in tincture of cinchona thrice daily was administered. The patient did not take the medicine very regularly, and several relapses occurred during the summer, although upon the whole improvement took place steadily. On November 25, she was delivered of an apparently healthy child, who, however, was subsequently treated for syphilitic disease of the bones.[1] During February, 1879, the muscular affection finally disappeared, and up to eight months later had showed no signs of returning.

CASE II.—Mrs. E. H., coloured, 44 years of age, mother-in-law of the former patient, and living in the same house, probably contracted syphilis at the same time as her daughter-in-law, although she could give no account of an initial lesion. She was first seen by me at the Dispensary for Skin Diseases on April 17, 1878. She presented at that time a papular syphiloderm scattered over the thighs and buttocks, and on the scalp. She was ordered one-third of a grain of the protiodide of mercury three times a day, which was afterwards changed for the iodide of potassium, at first in ten-grain, and later in fifteen-grain doses, alone, and at times combined with bromide of potassium, thrice daily. She remained under observation during the remainder of the year, taking the medicine however somewhat irregularly. In addition to the symptoms noted when the patient was first examined she subsequently suffered with gummata on the left leg, and with various nervous symptoms, headache, dizziness, multiple vision, and vibration of objects looked at with both eyes. In addition, deafness and roaring in the ears, together with stiffness of the cervical muscles, coming on towards night and disappearing when she grew warm in bed, were very troublesome symptoms.

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[1] This child's case was reported in the *Philadelphia Medical Times*, Sept. 1879, under the title of "Bone Syphilis in an Infant, accompanied by pseudo-paralysis and a peculiar spasmodic affection of the larynx."

Toward the end of January, 1879, when she had been under observation some nine months, she began to experience a certain stiffness and soreness about the left elbow-joint. This grew daily worse until at the end of five days she came to see me and was carefully examined. It was found that she could not place her hand on the back of her head, nor could she extend her forearm beyond an angle of 135°. Flexion also beyond a right angle seemed to be hindered by an enlargement of the biceps, but palpation failed to detect any abnormality in the muscle. The attempts at extension caused pain which was referred to the tendon of the biceps brachialis at its insertion and along its course for about two inches. Extreme pronation gave more pain than any other movement. There was no soreness in the muscular tissue of the biceps, but for some days the tissues about the insertion of the triceps were tender to pressure. The elbow-joint, the bursa of the tendon of the biceps, the skin and the connective tissue, were all apparently normal. The right knee was somewhat swollen; the leg could be fully extended but could not be flexed much beyond a right angle, and attempts at further flexion gave rise to quite severe pain referred to a point in the knee just below the patella.

The patient was ordered a mixture containing ten grains of iodide of potassium with $\frac{1}{32}$ grain corrosive sublimate four times daily. This dose was subsequently doubled. The condition of the muscles improved slowly but steadily under this treatment until April 18, by which time all traces of the affection had disappeared. Six months later the patient reported herself as enjoying good health, with the perfect use of her limbs; she had taken no medicine for four months.

CASE III.—Margaret W., a healthy, married, white woman, was not aware of having suffered any initial lesion of syphilis when, early in April, 1878, she was suddenly seized with headache and very high fever, together with a plentiful papular eruption and sore throat. She came under my notice for the first time on April 24, 1878, at the University Hospital, when she was found to be suffering from an extensive papular syphilitic eruption which had invaded all parts of the skin. There was a small mucous patch over the hard palate, but no other lesion in the mouth or pharynx. She complained of rheumatism in the right shoulder and left knee, which were both very stiff at night. (She had never suffered from rheumatism before.) She appeared thin, pale, and weak, although her appetite was good. She was ordered $\frac{1}{3}$ grain protiodide of mercury thrice daily. Under this treatment the patient's condition rapidly improved, excepting that rheumatism of the right elbow still troubled her. On May 25, her treatment was changed to $\frac{1}{32}$ grain corrosive sublimate in a teaspoonful of compound tincture of cinchona thrice daily. General glandular engorgement, which had not heretofore been observed, was now quite marked. The patient attended very irregularly through the summer, and probably took but a fraction of the medicine prescribed. Her general condition however improved rapidly, and the eruption had entirely disappeared, when she again came under my notice on October 16, complaining of severe pain in the left jaw. She was then ordered four grains of the iodide of potassium with $\frac{1}{32}$ grain corrosive sublimate thrice daily. The patient again disappeared and was not seen by me until March 28, 1879, about a year after the earlier symptoms of infection had appeared. At this time she complained of a helpless condition of the left arm, which she said had gradually become stiff, so that she "had to nurse it as if it were a baby." The joint seemed rigid, and the forearm could not be fully extended. Circumstances prevented a full note of her condition being taken at this time, but she was again placed under treatment and once more disappeared, not being seen until Sept. 24, 1879. At that time it appeared that for a month previously the arm had been getting gradually worse, and that movements were made with difficulty. Occasional shooting pains were experienced in the left shoulder, elbow, wrist, and knee-joints; none on the right side. The pain in the elbow extended to the fingers, which were slightly swollen and stiff. There was some tenderness over the top of the shoulder-joint, extending down along the outer border of the left scapula. The same sensitive condition subsisted along the course of the biceps, the elbow-joint, and in the ulnar groove. The forearm could be almost completely extended without pain; extreme extension gave rise to pain at the insertion of the biceps. There was pain in the ulnar grooves on complete flexion. There was no muscular trouble in the left thigh and leg, although extreme extension and flexion gave rise to pain referred to the knee-joint. None of the other muscles in the body or limbs were affected. On damp days and at night pains were experienced in the elbow-joint, and the arm felt heavy and dead and was often carried by the patient as if it were paralyzed. The same story of neglect was continued during the autumn, and when the patient was seen on December 11, 1879, the biceps was still slightly affected while the right triceps brachialis was very markedly so, the patient being unable to flex the forearm beyond a right angle. Extreme pronation of the forearm gave rise to pain referred to a point on the dorsal side about four inches above the wrists. There was also some pain in the neck and left knee and nodes could be perceived over the tibiæ. She was ordered ten grains of the iodide of potassium thrice daily, and returned a few days later somewhat improved, the forearm being capable of flexion somewhat within a right angle. Since that date the patient has not been seen.

An analysis of these cases and a comparison of the symptons here presented with those noted by the observers above quoted,[1] as well as by Cesbon,[1] Jullien,[2] and Bumstead and Taylor,[3] permits the following summary of the various facts known with regard to syphilitic muscular contraction.

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[1] Mauriac's prolix but exhaustive monograph gives the most complete account of the affection. A review of this work by Keyes of New York (Archives of Dermatology, vol. v. 1879, p. 108) presents the essential points in brief.

Syphilitic muscular contraction may attack any muscle of the body but occurs by preference in the biceps brachialis, and next to this in the triceps brachialis. According to Mauriac the muscles of the left side are those usually attacked, and if both sides are attacked it is to an unequal degree. In two of my cases the left side was affected; in the third, the right side. Examination shows that the diseased muscle, while entirely unchanged in form or consistency, is contracted so that (if the biceps, for instance, is affected) the forearm is flexed upon the arm at a variable angle. In Notta's cases the angle formed varied from 90° to 160°. In my Case I. the angle was 150°, in Case II. it was 135°, in Case III. it was probably from 160° to 170°. Within this angle the limb can be moved, but extension beyond a certain point is impossible, and the attempt at forcible extension is accompanied by pain referred to the insertion of the tendon in the radius. When the triceps is affected as well as the biceps a sort of muscular anchylosis results, neither flexion nor extension being possible. Usually the muscle itself is indolent; pressure and kneading do not give rise to pain. Now and then a case is met with (as my Case I.) where there is exaggerated sensibility manifested in the body of the muscle. More usually pressure upon the tendon develops tenderness. General pains throughout the muscular system, with stiffness, soreness, and occasional cramps in certain muscles are usual. In each of my cases stiff neck, coming on towards night, was noted particularly. The contraction develops insidiously, the whole course of the affection being slow and deliberate. Untreated, it may run on with remissions and relapses for a year or more.

The existence of syphilis is alone the necessary element in the etiology of the disease, muscular contraction being one in the train of symptoms. It belongs to the early manifestations of syphilis occurring most commonly, according to Mauriac, between the sixth and the tenth month. Cesbon's two cases occurred in the fourteenth and fifteenth month respectively. In one of my cases the muscular contraction first made its appearance in the seventh month; in the two others between the twelfth and the fourteenth month of the syphilitic disease. It usually occurs in light cases and where the skin lesions have been dry rather than ulcerative. The nervous element is often prominent (as in my Case II.). Mauriac says it is more apt to occur when pains in the muscles and fibrous tissues are common rather than in cases where the joints tend to be involved. This distinction does not appear in my cases where both muscles and joints were affected. Neither age, sex, nor occupation seem to exert a causative influence.

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[1] Etude sur la contracture musculaire syphilitique. Paris, 1879.

[2] Traité Pratique des Maladies Vénériennes. Paris, 1879.

[3] Treatise on Venereal Disease, 4th ed. Phila. 1879. (This admirable work, of which the fourth edition has appeared since this paper was written, contains a succinct but clear description of the chief features of the affection under consideration.)

If we attempt to investigate the pathology of syphilitic muscular contraction we are met with only negative signs. The joint, as has been pointed out, is intact, without swelling or pain. The bones are unaffected. The muscles themselves are, to all external appearances, normal; they show no swelling, no general or circumscribed induration. Even sensitiveness to pressure is not constant. It is not myalgia in the ordinary sense of the term, for in true myalgia the muscle is sensitive to pressure, while, however severe it may be, it permits motion—if the pain can be borne—while in syphilitic muscular contraction motion is absolutely prevented. Mauriac regards the process as a sub-inflammatory myositis, but Fournier denies this hypothesis, the almost entire absence of pain on pressure and the absence of induration or hardness being contrary to such interpretation. Neuritis cannot be accepted as a cause, for there is no evidence of nervous or spinal lesions. The sensitiveness of the tendon seems to point toward this as the seat of the affection, the muscle being influenced only secondarily. But as, unfortunately, no microscopic examinations of the structures involved have as yet been made we are in reality left to conjecture. In other words, as Fournier says, "we see an effect of which we cannot explain the cause."

The diagnosis of syphilitic muscular contraction may usually be made by reference to the concomitant lesions, for the affection occurs at that stage of syphilis where either some trace of the disease remains evident, or where the patient can at least recall some fact which will point to syphilitic infection. But the strongest evidence of the affection is negative. It may be safely said, in the present state of our knowledge, that no other affection can give rise to the symptoms above detailed.[1] They are quite characteristic. The diagnosis however is a matter of much importance, as, untreated, the affection tends to recovery only after a more or less prolonged course.

The treatment of contractive muscular syphilis should be that of the later stages of the general disease. Perhaps the mixed treatment is the most advantageous. Local applications influence the course of the affection very slightly, but they may be used, especially in the form of anodyne liniments, etc., where pain is present in the muscle or tendon.

The prognosis is favourable in any case, as the affection appears to tend to spontaneous gradual recovery. But its course may be much abbreviated and the occurrence of relapses obviated by regular and continuous treatment. Untreated it may last several months, occasionally several years. Among my cases, Case I., which was pretty steadily under treatment, recovered in eight months. Case II., which continued constantly under my supervision and careful treatment, recovered in ten months. Case III. however, where treatment was employed only at irregular intervals and for short periods, was characterized by several relapses, and when last seen, some ten months after the affection first appeared, was not cured, nor even markedly ameliorated.

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[1] The hysterical "muscular contraction" of Brissaud and Richet presents, indeed, some points in common with the affection under consideration, and chiefly in that it is prone to attack the biceps. But the concomitant symptoms would, probably, in any given case render the diagnosis easy.

ARTICLE VIII.

REMOVAL OF A LARGE, INTERSTITIAL UTERINE FIBROID. By T. GAILLARD THOMAS, M.D., Professor of Diseases of Women in the College of Physicians and Surgeons, New York.

No variety of uterine myoma is possessed of more interest and importance, from a surgical standpoint, than that which develops within the interstitial structure of the uterus, projects very decidedly neither towards the peritoneum nor the endometrium, and receives the name of interstitial or intra-mural tumour. The surgical resources at our disposal for submucous growths which occupy the cavity of the uterus, as well as for those even of the largest size, which are attached to the peritoneal surface of the uterus, and occupy the abdominal cavity, are at the present day very efficient and satisfactory. This is by no means the case with the interstitial fibroid, and every advance in the direction of its systematic treatment by surgical means will be received with favour where there is so much need of improvement in our resources.

The following case is related, not as an isolated and desultory example of a remarkable operation, but as an illustration of a system which, by its efficiency and simplicity when applied to appropriate cases, will in the future, I trust, accomplish a great deal of good where at present very little effort at surgical relief is ever made.

Georgiana P., æt. thirty-six years, who has been married fourteen years, and had one child twelve years ago, since which time conception has not occurred, was admitted to my service in the Woman's Hospital, Dec. 20, 1879. The patient was perfectly well until April, 1879, when, just after a menstrual period, she was suddenly seized with profuse uterine hemorrhage, accompanied by severe uterine tenesmus. This lasted only twenty-four hours, but it exhausted her very much indeed. At every menstrual epoch which has occurred since that time she has had profuse hemorrhage, with what she styles "bearing-down pains." This has lasted usually about nine days. During the months of July and August she suffered very much from dysuria and rectal tenesmus. For the last four or five months before admission she had been almost entirely unable to walk, because locomotion created the "bearing-down pains" already alluded to. She declared that up to April, 1879, she was in excellent health. She was anæmic, very pale, and extremely weak. During the month of October, hemorrhage was so severe that a vaginal tampon had to be applied repeatedly to check the excessive discharge of blood.

Upon physical examination the uterus was found very large, the fundus extending up to a point midway between the umbilicus and ensiform cartilage. The cervical canal was distended so as to admit the tip of the index finger freely. The posterior uterine wall, including the cervix, was immensely hypertrophied, and out of all proportion to the anterior. The uterine cavity, measured by an elastic sound, was found to have a depth of nine and a half inches, the sound passing upwards, and then inclining somewhat backwards towards the spinal column. The following diagram will convey a more correct idea to the mind of the reader than a much more lengthy description in words would accomplish.

The patient, with her husband, had come from Colorado Springs, and was exceedingly desirous to have some curative treatment adopted, for experience had taught her the inutility of the treatment by ergot, preparations of lime, and the various other therapeutical resources which are ordinarily adopted in cases such as hers. Accordingly, she was seen with me in consultation by a number of my colleagues of the hospital staff, before whose consideration I laid the operation which this paper will describe; and I was thoroughly sustained in the resort to it.

Fig. 1.

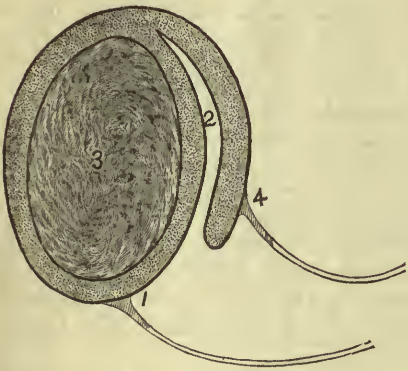


Diagram representing the tumour imbedded in the posterior wall of the uterus. 1 shows the projecting posterior wall; 2, the uterine cavity; 3, the tumour; 4, anterior uterine wall at the point of attachment of the anterior vaginal wall.

The propriety of the operation and the urgent demand for prompt action in this case were from the first quite clear to my mind, and at no time did any doubts as to the justice of this conclusion present themselves. The reasons for my convictions were the following:—

1st. My experience with the spoon-saw in a large number of cases made me feel confident that success would crown my efforts as to the mere surgical part of the work.

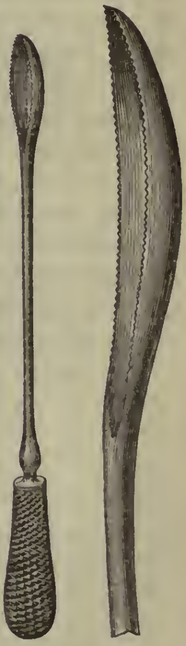
2d. The tumour, already large, was growing fast, and, in a few months, the abdomen would have had to be opened to give exit to it.

3d. The patient was losing large amounts of blood, and growing, of course, steadily weaker, and progressively more despondent.

4th. She lived in Colorado, far away from any surgical centre, and, if she were sent away now, it was highly improbable that, weakened by hemorrhage, discouraged by failure to obtain relief from surgery, and alarmed by the great and increasing size of the abdomen, she would ever again make an attempt to save her life. In the present I saw a courageous and comparatively strong and healthy woman, with a fairly good blood state, unimpaired nerve condition, efficient digestive function, and a tumour weighing two pounds, not willing merely, but eager for operation. In the future I foresaw an anæmic, feeble, and despondent one with impaired digestion, an exhausted nervous system, and a tumour weighing eight or ten pounds, still willing to submit to operation perhaps, but doing so with diminished hope and lessened enthusiasm.

On the 5th of January I proceeded to remove the tumour in the following manner, and in the presence of Prof. Alfred C. Post, and Drs. Emmet, C. C. Lee, J. B. Hunter, C. S. Ward, H. D. Nicoll, S. B. Jones, and the house staff of the hospital. The patient, having been etherized, was placed in Sims's position upon a strong table before a window admitting a good light. During the steps of the operation I was ably assisted by the assistant surgeons in my department, Drs. Ward and Nicoll. Sims's largest speculum having been introduced, and the perineum and posterior wall of the vagina lifted by it, I caught the uterine wall at the point marked by the figure 1 (Fig. 1), and, by means of a pair of long-handled scissors, snipped a piece out of it, extending deeply into its structure. Upon this a very free flow of blood occurred, but I disregarded it, and as I proceeded with the operation it very soon ceased. Keeping a strong tenaculum fixed in the uterine tissue between the figure 1 and the posterior vaginal walls, I now passed my right index finger into the opening which I had made, and in this way enlarged it somewhat. Then taking a very strong and large grooved director, I forced it upwards towards the figure 2, and sliding a knife in its groove, I slit the enveloping uterine wall high up into the uterine cavity. By the finger I now enlarged the opening thus made, and was at once gratified by the sight of the white fibrous structure of the tumour of which I was in search. Into this I at once fixed a powerful pair of vulsellum forceps, and taking the spoon-saw shown in Fig. 2, I swept it around, and detached the tumour from its uterine bed for about an inch and a half or two inches all around.

Fig. 2.



The spoon-saw.

I now made traction upon it with the vulsellum, but found that the tumour was too large to be dragged down into the pelvis. Taking, then, a pair of long-handled scissors, I cut out the portion of the tumour within the bite of the forceps, removing a piece about as large as a hen's egg. Then seizing another portion of the tumour, I cut it out, and continuing in this way I removed, piecemeal, all that portion which I had detached by the spoon-saw.

I now seized the tumour again with the vulsellum forceps, and detach-ing, by means of the spoon-saw, about an inch and a half more of it, I removed it piecemeal by the scissors as already described. This process I repeated till about one-third of the tumour only remained, when I detached the entire mass with the spoon-saw, and drew it away.

The operation lasted one hour and twenty minutes. After the first incision it was accompanied by almost no hemorrhage, and the patient bore it remarkably well. At its conclusion the large cavity left by the removal of the tumour was syringed out with strongly carbolized water, and stuffed to its full capacity with carbolized cotton. The patient was put to bed; given a full dose of morphia hypodermically; kept very warm by the application of artificial heat; as soon as she could swallow, given brandy and water in small amounts at short intervals, and kept upon the general regimen usually adopted as preventive of shock.

I shall not weary the reader with a detailed account of the progress of the case; suffice it to say, that no bad symptoms developed themselves, and that to-morrow, February 5, just one month after the performance of the operation, the patient expects to leave the hospital for her home.

The tumour weighed exactly two pounds, and was a good example of the ordinary myo-fibroma. It must be remembered that its duration is unknown. True, it was discovered in April, 1879, but it is highly probable that it had existed long before that time.

At the conclusion of the operation, an eminent surgeon who was present remarked that he was surprised that I had depended so little upon the spoon-saw in its performance. My own feeling in regard to the matter is this: Without the spoon-saw nothing would have induced me to touch this case; with it at my disposal, I would willingly undertake to cope with any number of similar ones. After having detached segment after segment of the lower portion of the tumour, dismemberment and removal of parts of it were easy. An attempt to excise and remove the growth before detachment would, I think, have very soon been followed by the filling of the vaginal canal with intestines.

During the past ten years I have removed a great many large submucous tumours, but only once before, October, 1878, have I removed one of truly interstitial character. That weighed eight ounces, and was removed exactly as this one was, except that the dismemberment of that by the scissors was not necessary.

NEW YORK, Feb. 4, 1880.

ARTICLE IX.

ON THE DIAGNOSIS OF FRACTURES AND DISLOCATIONS, WITH A VIEW TO THE ESTABLISHMENT OF PATHOGNOMONIC PRINCIPLES.

By L. A. DUGAS, M.D., LL.D., Prof. of Surgery in the Medical College of Georgia.

THE difficulties presented in making a correct diagnosis in injuries of the limbs, and especially of fractures and dislocations, are too generally conceded to require any illustration at our hands. We will therefore proceed at once to the suggestion of principles that may be found to facilitate the study of such cases.

In the establishment of the pathognomonic test for fractures and dislocations of the shoulder-joint, the writer has the satisfaction to know that time has done its work, and that the principle then advocated has survived all opposition, and is now generally recognized as correct. This result has prompted the writer to much reflection with a view to determine whether there might not be found other physical rules applicable to other physical injuries.

In injuries of the limbs we are called upon most generally to determine whether the case be one of fracture, of dislocation, or of mere sprain or contusion. The problems to be solved, then, are: 1st. Are there any physical phenomena which invariably attend *fractures*, and which would therefore become pathognomonic of such accidents? 2d. Are there any physical phenomena which invariably attend *dislocations*, and which would therefore become pathognomonic of such accidents? 3d. Is there any pathognomonic indication of sprain or contusion?

In answer to the first question I would submit the following proposition: *Fractures produce mobility where there existed none before.*

It is true that in impacted fractures, such as sometimes occur in the upper end of the femur, no *mobility* may exist. But this kind of fracture is so rare that few have seen a case of it, and it should not invalidate a maxim strictly true in all other forms of fracture. Some casuists might urge that in the so-called *green stick* or partial fractures usually found in the forearm there is no mobility; but this may always be detected if properly sought under the influence of anæsthesia.

In reply to the second question I would offer proposition No. 2: *Dislocations impair mobility where it existed before.* This is, I believe, strictly true of all dislocations with the exception of those of the clavicle. In making out the diagnosis of shoulder dislocations it was found that *certain* movements were impossible. I now propose to generalize, and to make *impairment of mobility, where it existed before*, the test of all dislocations except those of the clavicle.

In fractures implicating the hip the limb affected can be placed in any *natural* position, whereas this cannot be done if there be a dislocation. There is nothing in a fracture of the upper end of the femur that will prevent the patient from lying flat on his back with the limbs extended so that the knees and ankles come together. But this cannot be done in cases of dislocation of the hip, unless it may be in some old and rare case in which the head of the bone has accommodated itself to its new locality so as to increase the ability to execute certain movements. Such cases should not lessen the value of the proposition laid down as correct.

The third question applies to sprains and contusions alone, and is met by proposition No. 3: *Mere sprains and contusions occasion neither increase nor diminution of mobility.* There exists only pain and tumefaction.

Admitting the correctness of the above propositions, let us see how they apply to instances in which there occur both a fracture and a dislocation, as is not unfrequently the case with the elbow. These cases constitute some of the most perplexing diagnostic problems. Let us suppose a case involving fracture of one or both condyles of the humerus, with dislocation upwards and backwards of one or both bones of the forearm, and apply our tests for the purpose of determining the true state of the joint. If there be a *fracture there must exist a mobility where none existed before*, that is to say, about the condyles, where crepitation may be detected. Again, if there is a dislocation, *there must be impairment of mobility where it existed before*, and consequently the normal movements of the elbow must be restricted. Thus it appears evident that the suggested *principles* are equally applicable and useful in simple and in complicated cases.

Having determined whether we have to deal with a fracture, a dislocation, or a sprain or contusion, there remains only to distinguish between the different fractures and dislocations—a task which presents no difficulties.

With this brief enunciation of my views, and without unnecessary multiplication of words, I submit the following aphorisms to the consideration of the profession:—

1st. Fractures produce mobility where there existed none before.

2d. Dislocations impair mobility where it existed before.

3d. Sprains and contusions occasion neither increase nor diminution of mobility.

AUGUSTA, GA., Nov. 1879.

ARTICLE X.

ON THE RELATIVE VALUE OF THE SULPHATES OF ATROPIA AND OF DUBOISIA IN OPHTHALMIC PRACTICE.

By S. D. RISLEY, M.D., Lecturer on Ophthalmoscopy in the University of Pennsylvania; Ophthalmic and Aural Surgeon to the Episcopal Hospital, Philadelphia.

IN the later part of 1878 I first learned of the new mydriatic Duboisia through the medium of a brief abstract in the number of this Journal for April, 1878, of a paper published by a London ophthalmic surgeon, who claimed for it that its action over the pupil and muscle of accommodation was similar to that of belladonna; but that it was more prompt and energetic, and its effect more evanescent. If these claims were well founded, this new drug it was evident must soon replace the atropia belladonna in certain branches of ophthalmic practice. I at once gave an order to a prominent drug firm for a small quantity of the sulphate of duboisia but did not succeed in procuring it until May 30th, 1879. In the mean time

Dr. Wm. F. Norris had secured some of the drug and began experimenting with it at the eye dispensary of the University Hospital, where I had the opportunity to witness some of the results which he afterwards published in the number of this Journal for April, 1879. On the first of June I began the use of the new mydriatic in my private practice, using it for all purposes for which I had before used atropia, in fact displacing the old mydriatic by the new, both in the treatment of inflammatory troubles, and for paralyzing the ciliary muscle for the correction of refraction errors.

For the latter purpose alone I have up to the present time (Feb. 1st, 1880) employed it in one hundred and forty cases, in eighty of which a careful record was made until the ciliary muscle had regained its function. The object of this paper is to compare the results obtained in these one hundred and forty cases, with my former experience in the use of sulphate of atropia.

The use of atropia in ophthalmic practice was attended with serious inconvenience to the patient suffering from asthenopia consequent upon anomalies of refraction, and in the minds of some ophthalmic surgeons there was a growing distrust of its entire safety. It was claimed that its application even in healthy eyes was followed by increased intra-ocular tension, and in some instances to well-defined attacks of glaucoma.

I am indebted to Dr. A. G. Heyl for calling my attention to the following case of acute glaucoma published by Hugo Magnus.[1]

> A patient who had normal pupillary reaction, tension and visual field, was atropinized for the purpose of examining more thoroughly the cataractous condition of each lens. About five hours later the patient was seized with violent pain in the right eye. He was not seen by Magnus until three weeks later. Examination then showed an acute glaucoma in the stage of decline, the very acute symptoms having subsided. The anterior chamber was shallow, pupil widely (?) dilated, and stationary. T + 2. Moderate ciliary injection and narrow visual field. There was no reason to suppose that a chronic glaucoma had pre-existed. "Why the right eye alone was affected is not explained."—Nagel, *Jaresbericht*, 1876.

The means at hand for determining slight degrees of varying tension are so inadequate that statements regarding the invariable increase of tension by the use of atropia must be accepted with extreme caution. I am free to confess that I have never been able to demonstrate to my own satisfaction any *increase* of tension following its use in normal eyes. Palpation of the eyeball is, without doubt, the most reliable method of determining varying degrees of resistance, and even after long practice the muscular sense is not sufficiently delicate to remove all doubt. In a doubtful case it not unfrequently happens that two equally competent and experienced men will differ in judgment as to the state of tension in the eyeball. It is probable furthermore that in healthy eyes the tension differs with varying degrees of arterial pressure.

The later investigations have by no means simplified the subject of glaucoma. It is now clear that the obviously cupped nerve, the stony hard ball, contracted field of vision, etc., are not essential in the glaucomatous process. (Mauthner, *Archiv of Ophthalmology*, vol. viii. No. 1.) While this fact doubtless enhances the danger from the promiscuous use of atropia in unskilled hands, nevertheless it renders it at least probable that the cases of so-called healthy eyes in which the glaucomatous process has been fulminated by the use of the mydriatic, have been eyes already affected by some one of the insidious forms of the disease.

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[1] Klinische Monatsblätter, Nov. 1876.

The fact, however, is well established, that in certainly glaucomatous eyes the atropia is a most dangerous agent, frequently setting up glaucoma fulminans, in the subacute variety, and causing markedly increased tension and pain in acute glaucoma when mistaken by the unwary for iritis or some other of the more frequent inflammations of the external tunics.

Again in serous iritis, in subacute or chronic inflammations involving the iris, ciliary body, and choroid, it not unfrequently disappoints the surgeon by aggravating all the symptoms, and leading to a positive increase of hardness in the eyeball.

It has, therefore, been long recognized that atropia should be used with skilful caution.

I am convinced, however, that in healthy eyes the sulphate of atropia may be used with impunity for the purpose of setting aside temporarily the function of the ciliary muscle. This judgment is based upon an experience sufficiently large. In the daily routine of private work I have corrected over 900 cases of refraction error under atropia. In these a solution of the sulphate of atropia, gr. iv–f℥j, was used for periods varying from twenty-four hours to several weeks, three times daily. At the Eye Dispensary of the University Hospital, since 1871, all of the cases applying for relief from accommodative asthenopia have been treated in like manner and aggregate a very much larger number. I am not aware of any injury resulting from its use, and in no instance have I regretted its application. It has frequently happened in my office that complaints against some other surgeon have been entered because of the application of atropia, and the statement made that the eyes had never been as good since as before the atropia was used. When inspection, however, showed a normal sharpness of sight and range of accommodation I have been disposed to take these statements *cum grano salis*. The following case is one illustrating with some force how some of the prejudice against the use of mydriatics has been manufactured:—

Mrs. B., æt. 43, came complaining of severe asthenopia. The distress following the least use of her eyes had for several years compelled her to lead a life of idleness and wretchedness since she could not sit at a lecture, walk the street, or ride in cars or carriages—unless with her eyes closed—without paying a severe penalty in an attack of "sick headache."

A careful study revealed the existence of hypermetropic astigmatism with high insufficiency of the internal rectus muscles. She was advised that her troubles possibly depended upon these anomalies, and that they should be corrected. She promptly declined unless the correcting-glass could be ordered without the use of atropia. She then related that it had been used once, and a glass ordered two hours after its instillation; that her eyes had never been as good since;—yet by her own relation she had for years before been a great sufferer. After a short effort to select a glass for her the ciliary muscle was found in a state of constant change, and I declined to advise her any further unless she submitted to the use of the atropia. She was given a formula for the atropia solution, and requested to return to her home in the centre of the State, and, if she saw fit to change her mind, use them for a few days and return. In two weeks she returned entirely free from her asthenopia, having used the drops on her own responsibility for more than a week three times daily, and was delighted with the relief which had followed. No difficulty was now experienced in selecting the correcting-glasses, from the use of which permanent relief was secured.

Now it is doubtless true that a very much exaggerated edition of the story of her injury by atropia had been repeated to her friends, and by them spread still further. The subsequent result proved her mistake. These stories of injury related by wandering patients should be received, certainly by ophthalmic surgeons, only after careful scientific proof of their truthfulness. The above case is but one from a very large group.

The *necessity* for this method in the correction of the anomalies of refraction and accommodation is a conviction which has become more deeply rooted with enlarging experience in its employment. The undue strain upon the ciliary muscle, and the discord between the accommodation and convergence, which is introduced by the errors of refraction, are very sure in hardly worked eyes to lead sooner or later to hyperæmia of the choroid and retina, and a condition of irritability which will not subside except under enforced and frequently prolonged rest of the eyes from work at a near point. This may often be accomplished by prolonged absence from school, or protracted avoidance of the ordinary employment for the eyes. This alone, however, will frequently fail; and for the reason that absolute rest cannot in this way be secured. No sooner is comparative comfort experienced than use of the eyes is begun, the morning paper if nothing else proving a constant temptation. Moreover, it is impossible even to walk about without a constant activity of the accommodating muscle. Under the use of atropia the ciliary muscle is paralyzed, and its constant action on the choroid thus dismissed. Under its use the retino-choroidal irritation very rapidly subsides. The undue sensitiveness to light, at first increased by the dilatation of the pupil, soon disappears; the increased redness of the optic nerve surface and the engorgement of the choroidal and retinal vessels subsides, and the periorbital neuralgia and occipital pain are relieved. Farther than this it is quite impossible in a large number of cases to ascertain the correcting-glass without first paralyzing the ciliary muscle, all glasses in many cases being persistently rejected, and that, too, by the cases most in need of them; or if a glass is accepted at all it is very likely to be very far from a true correcting-glass. Hypermetropic eyes not infrequently select weak concave glasses instead of the needed convex correcting lens. The following is a case in point, selected as the representative of a large group of cases, which will also illustrate the necessity of a protracted use of the drug as intimated above:—

Mrs. S., æt. 26, consulted me in May, 1879, in consequence of inability to use her eyes for even short intervals without causing a burning and itching in her eyelids with increased flow of tears. If the effort to sew or read were persisted in she would have an attack of "sick headache." Indeed she suffered almost constantly with temple pains, and a sense of weight and soreness in the occipital region. The conjunctivæ were finely injected and the edges of the lids red and scaly, and she had frequently occurring styes—V $= \frac{6}{9}$ in each eye $(\frac{20}{30})$, and she could read Jr. D $= 5$ up to 18 cm., this being the nearest possible point.

She had been ordered, two years before, after twenty-four hours' application of atropia solution concave $\frac{1}{48}$ to be worn constantly, and with this she had normal sharpness of sight, but could wear her glasses for only a short time without great increase of her suffering. The ophthalmoscope showed marked choroido-retinal irritation, and the light from the ophthalmoscopic mirror was painful. The atropia solution (4 gr.–f℥j) was applied three times daily for four days before there was any marked amelioration of her symptoms. The first two days she still selected a concave glass. On the fifth day the eyes were quiet and comfortable. The dread of light had disappeared entirely, and V without glasses had sunk to $\frac{6}{24}$, with + (convex) 1, D V $= \frac{6}{6}$ or normal. This was ordered for constant wear. Three months later there had been no return of the symptoms; she could now use her eyes with impunity and with her correcting-glass (+ 1 D) V $= \frac{6}{6}$ Jr. D $= .5$ p. p. 17 cm.

In this case, as in the preceding, it would have been impossible without the mydriatic to have ascertained and corrected the existing error.

Hypermetropes not infrequently by spasm of the ciliary muscle simulate myopia. I have many times found them wearing concave glasses selected at the nearest opticians. Myopes, as a rule, select glasses very much higher than is necessary to correct the existing defect. The only means at our command by which all uncertainty can be removed is in the use of some agent to paralyze the accommodating muscle, which otherwise must stand as an unknown quantity to vitiate results.

This necessity is, however, an unfortunate contingent. The use of any agent which for the time removes the power of adjustment is a serious inconvenience to the patient. The eye can be focused only for its far point, consequently the individual is unable to read and write except in cases of sufficiently high myopia. If the myopia be equal to $\frac{1}{14}$ or more the far point is then at most 14″ from the eye, which is quite near enough to read ordinary print, and such individuals suffer but little inconvenience unless the myopia is complicated with a considerable degree of astigmatism. Even after the most candid statement to patients of the effect of the drug they are frequently alarmed by the reality, and need constantly to be reassured. It is difficult to realize the great value of the power of adjustment for varying distances until it is lost. The merchant who for many days finds himself unable to sign a check, or look over his ledger and correspondence, or to read his daily paper, grows extremely restive, and would not again submit to it himself or advise his friends to do so except in the case of a most urgent necessity.

The annoyance does not always stop with the blurred sight and inability to read. The widely dilated pupils permit a flood of light to enter the eyes, perhaps already unduly sensitive to their normal stimulant, so that smoked glasses are necessary to shield the eyes from the glare of light when out of doors. These are unsightly and expose him to the inquiries of anxious friends or inquisitive acquaintances, to which many persons are extremely sensitive. The solution often flows freely into the nasal passages through the tear ducts and is swallowed, not unfrequently giving rise to the constitutional impression of the drug—*e. g.*, dry throat, pasty tongue, hot skin, etc.

In two cases I saw a mild form of strangury produced by it, and in one case incontinence of urine with flushed face, dry throat, loose stools, accompanied by a mild intoxication. These cases are rare, and are, doubtless, due to some idiosyncrasy or a lavish use of the drops. In one of these cases, a gentleman suffering from progressive myopia, the constitutional impression seemed to be due to some peculiar condition of the system at the time, since he had no trouble whatever a year later when it was found necessary to use the atropia again, which was done in the same manner in all particulars as at the first.

The annoyance from the blurred sight continues for from ten days to three weeks after omitting the atropia.

In eighty cases selected consecutively from my private case-book, being the last cases treated under atropia before adopting the duboisia in its stead, the average time the atropia was used was five and a quarter days; the shortest time being one day—four instillations; the longest sixteen days. The invariable method of using it was a drop or two of a four-grain solution instilled into each eye three times daily. Unfortunately for the purpose of this paper, no accurate record has been made of the returning function of the ciliary muscle after omitting the use of the drops. While this is to be regretted, nevertheless, ample opportunity has been afforded in the routine of practice to observe very closely the date of return. There are some conditions which render it desirable to await the full return of the power of accommodation before ordering the reading glasses—*e. g.*, where it was expected that it would be necessary to add prisms to the correcting-glasses for use while reading. It was very rare to find the muscular power restored before the *tenth day*, and very frequently a longer time than this was required. In cases where the solution has been used more than twenty-four or thirty-six hours the power of accommodation was not fully restored before the end of the second week, or even longer than this in some cases. Ordinarily in from seven to ten days they were able to read very coarse print, or their own handwriting when held far from the eyes. If the effort to read was persisted in the eyes soon tired and the page blurred again. From this time the recovery was rapid, so that on the twelfth to the fourteenth day the near point had returned to the place recorded before the application was made, and the iris had regained its normal activity; so that the duration of treatment was rarely less than two weeks, and in many cases three weeks or longer from the first instillation to the full return of the function of accommodation.

Neutral solutions of sulphate of atropia have but very rarely caused any trouble from the conjunctival irritation; it is probable that distilled water dropped into the eye three or four times daily, for many days, would cause more or less irritation. Trouble has been occasionally experienced from acid solutions of atropia, or from some unknown defect in its preparation which has rendered it irritating. The difficulty, however, has quite invariably disappeared when a carefully prepared solution was obtained. It has frequently happened under the prolonged use of atropia that, after a time, some complaint would be made that the drops caused smarting after each application, which they had not done at first. My habit has been, in these cases, to evert the lids and touch them lightly with a crystal of alum, which has quite uniformly removed the hyperæmia, and with it all cause for complaint. The atropia more frequently relieves in a few days the hyperæmia which had before existed. It is very common to see the blepharitis ciliaris, which so constantly depends upon eye-strain, entirely removed by the use of atropia without any other application, and before the optician has had time to furnish the required correcting glass.

In old people who have been operated upon for cataract, I have repeatedly seen the conjunctiva grow puffy, with engorgement of the circulation, and enlarged papillæ in the retro-tarsal folds, after its prolonged use, but have always been able to continue it by using at the same time a weak astringent solution, either combining the alum or sulphate of zinc with the atropia, or instilling it separately a few moments before or afterward.

I have had but one case which affords an exception to the above statements.

A school-girl, with hypermetropic astigmatism, who was compelled to stay from school because of her weak eyes, came to the eye dispensary at the University Hospital for relief. There was found, in addition to her error of refraction, marked retinal irritation, and, at the upper and temporal side of each nerve, a yellowish-red patch of choroid, outlined by small pigment heaps. She was ordered, in addition to other measures, an atropia collyrium and smoked glasses. The following day she returned with catarrh of the conjunctiva, and complained that each application caused intense smarting.

Supposing she had a badly prepared solution, she was directed to our own apothecary at the hospital for a renewal, which, however, produced the same result, and was not relieved by the astringent. Tension remained normal. The atropia was stopped, and in ten days the pupil was normal in size and the conjunctiva healthy. She was now directed a solution of duboisia sulphat. (gr. ij–f℥j), which produced the same result as the atropia had done; but it was now in great measure relieved by the alum crystal, and a collyrium of the same at home, to be used ten minutes before the duboisia; but at no time did she use the drops comfortably.

In regard, then, to the conjunctival irritation following the use of atropia, there has been but slight cause to enter complaint.

The greatest drawback to the use of sulphate of atropia was its tardy action in paralyzing the power of accommodation, and, this once gained, the persistency of its effect. Any drug which would accomplish this purpose more rapidly without danger, and, withal, resign its control more quickly than the atropia had done, would be more valuable than the atropia in the same proportion in which it possessed these advantages. That the sulphate of duboisia possesses in high degree these advantages the writer thinks is borne out by his experience in its use in one hundred and forty cases of refractive error.

My own observations regarding the rapidity of its action over the pupil and accommodation have accorded in the main with the published results of other observers. It was hoped that in the new mydriatic we had found a drug which in a very short time, *i. e.*, in a few hours, would paralyze the accommodation and admit of a speedy determination of any existing error, thereby saving valuable time both to patient and surgeon. In this hope I have been disappointed, except in a few cases where the choroid and retina had not suffered from the accommodative strain. In one hundred and forty cases there were seven examples of this kind where, from one to two hours after the first instillation, not a vestige of the accommodative power remained. In all but two of these cases this was verified by the continued use of the drops, and in one case by the continued use of atropia for one week subsequently. One of these patients was a medical student, with $H = \frac{1}{6}$. He consented to its application for three days, three times daily. Each day he selected the same glass, which was finally ordered for him. His eye, however, had not suffered in the least from its defect of refraction, his only trouble being the inability to maintain distinct sight. In each of these cases the eyes were healthy.

The same result was repeatedly sought in other cases *one*, *two*, and *three* hours after the first instillation, but in only these seven cases was this gratifying result attained. In four of these cases a four-grain solution of duboisia sulph. was used, while in three cases a two-grain solution was instilled into the eye.

In the majority of cases applying for relief from eye-strain, there will be found more or less hyperæmia of the end of the optic nerve, and irritation of the retina and choroid. In such cases it is futile to hope that any agent will in a few hours produce the requisite quietude in the ciliary muscle. *It is probable, furthermore, that such a result is in many cases not desirable*, the continued use of the drops being necessary until the retino-choroidal irritation shall have subsided. A few moments of trial for a correcting glass is often quite sufficient to stimulate the ciliary muscles into active contraction again in these irritable eyes, and a careful measurement of the existing error can be made only after the entire subsidence of the hyperæmia of the choroid and retina.

The stronger solution (gr. iv.—f℥j), with only a few exceptions, caused giddiness, weakness in the knees, and a desire to sleep, attended in some instances, with hallucinations. One gentleman said he no sooner sat down, than he began to dream ; but always that he was reading fine print, which he could with difficulty make out, and frequently, when aroused, would be holding his hands and arms in the same position as that usually adopted in holding his morning paper.

A lady who had for two days been using a two-grain solution without any constitutional impression, became so weak after a drop of a four-grain solution that she had to take a reclining chair. The dryness of the mouth and throat was not nearly so marked as with atropia, even when the constitutional impression resulted. These symptoms usually lasted from half an hour to one hour, and no further inconvenience was experienced. These marked general symptoms following its use very soon deterred me from employing the stronger preparation.

Since the first few weeks of my experience with the duboisia, a solution of 2 grs. to f℥j has been invariably employed.

Solutions of this strength were used with the same impunity I had before used the four-grain solution of atropia. A two-grain solution was ordered, and the patient directed to instil one or two drops in each eye, three times daily. The constitutional impressions rarely resulted, and then in very mild form, a sense of weakness in the knees being the symptom most frequently complained of. A number of times patients have complained, within ten or fifteen minutes after the first instillation, of being giddy. One person described it as the same sensation produced by swinging, or turning around and around rapidly. I believe this to be due to the rapid or sudden action over the pupil and ciliary muscle, and not to any constitutional impression, since it disappears with equal rapidity and is not experienced afterwards.

The weaker preparation of the duboisia has proved more rapidly effective in paralyzing the ciliary muscle than the four-grain solution of atropia had been, and has caused less inconvenience to the patient from the constitutional impression of the drug. In three of the cases I had before used the atropia. A medical student who had, a few months before, suffered great inconvenience from the constitutional effect of the belladonna, was able to use the duboisia solution five days, three times daily, without constitutional symptoms, and very positively expressed himself in favour of the latter.

The average time required for the use of the duboisia sulphate was *three and a quarter days*, while it was required to use the atropia solution, in a like number of cases, *five and a quarter days*. After the use of atropia, ability to read is not secured until from the *seventh* to the *tenth* day, while after duboisia, the morning paper can be read in two to four days, and the accommodation is fully restored on the sixth or seventh day, even after its use has been continued for many days.

A few irregularities have been observed in the return of accommodation. In one case on the third day the range of accommodation had returned to $\frac{1}{8}$, that is to say, he could, with his correcting glasses, read Jr. 3 at 8″ (p. p.); but on the fourth day the pupils were again widely dilated, and there was no range of accommodation. On the fifth day, however, he could read easily, and the subsequent progress was normal. The iris, in a number of cases, had not recovered from the influence of the drug when the range of accommodation had fully returned. No accurate record was made of the state of the pupil, but I have the impression that the function of the ciliary muscle is recovered sooner than the function of the iris. The opposite is undoubtedly true regarding atropia.

In two cases, aged, respectively, 24 and 33 years, the returning range of accommodation followed that usual after the use of atropia. On the fourth day, with correcting glass and $+\frac{1}{12}$ added, p. p. 8″. Seventh day, 6″. On the eighth day, with correcting glass alone, the near point had reached, in the first, 7″; in the other (æt. 33), 8″. These cases, so widely separated in this respect from the others in which the duboisia was used, lead me to suspect that there had been a mistake upon the part of the druggist who supplied the solution used at home.

My impression is that the duboisia causes more conjunctival irritation than the atropia. It is quite common to hear the complaint, after a few days, that the drops caused smarting, when at first they had not done so. In a few cases where atropia had been used in the past, either by myself or others, I used the duboisia without intimating, until the close of the treatment, that any different preparation had been employed. In most cases no difference was noticed by the patient regarding his immediate inconvenience. One gentleman, however, asked me if the same drops had been used as had been employed one year before. He voluntarily stated then that he discovered, to his surprise, that on the second day after the drops were stopped he could sign and read a check very comfortably, and on the morning of the third day boasted of being able to read his morning paper in my waiting room, which he was quite sure he was not able to do before, *i. e.*, under the atropia, inside of ten days. He had also at first been made very uncomfortable by the atropia and had noticed no difference in this respect from the duboisia, but I had used a four grain solution instead of the usual two grain solution.

A careful study of the individual cases has shown that the average number of days as stated above, viz. $3\frac{1}{4}$ days, required to use the duboisia is very much too high.

Thus, *e. g.*, the drops were used—

28 days in	1 case.
14 "	1 "
11 "	1 "
7 "	2 cases.
6 "	4 "
5 "	10 "
4 "	11 "
3 "	28 "
2 " or less	23 "

If we exclude from the table those cases in which the use of the drops was prolonged because of retino-choroidal disturbance; and make due allowance for a number of cases living away from the city, in which an earlier visit would have shortened the time during which the drops were used, the average time the drops were used in healthy eyes will fall to about two days.

It will be seen then that the duration of the treatment in all ordinary cases of refractive error will fall within one week counting from the first instillation of the duboisia to the return of accommodative function; whereas under atropia from two to three weeks were required.

In the earlier cases in which the stronger solution (gr. iv–f℥j) had been used, the accommodation was recovered as soon as in those in which the weaker solution had been used; no difference being shown by the record in this respect. Nor did the protracted use of the drug seem to cause any variation in the duration of its effect over the function of the ciliary muscle after stopping its use.

In the treatment of inflammations of the conjunctiva, cornea, and iris, duboisia has proved quite as efficacious as atropia, but has not seemed to present any advantage, while its greater cost will at present commend the use of the old mydriatic. In the marked pain and photophobia in a case of corneal abrasion, and in numerous cases of phlyctenular disease, the result was apparently the same as though atropia had been used.

In the treatment of iritis and irido-choroiditis its effect was equally efficacious with atropia, but not more so in tearing loose posterior synechia. In a single case of rheumatic iritis, however, the duboisia exhibited a very important advantage over atropia. On the introduction of duboisia into ophthalmic practice a very interesting inquiry presented itself, viz., *would the new mydriatic be equally dangerous in glaucomatous eyes?*

The following case as an answer to this inquiry is of great interest:—

Mrs. M., æt. 63, consulted me in May, 1879, for failing sight, O. D. $V = \frac{6}{12}$, O. S. $\frac{6}{9}$. She complained that there was a fine mist before her eyes constantly. No pain. The cornea was transparent, but through the undilated pupil the fundus was indistinctly seen. Tension normal. A weak solution of atropia was instilled in order to afford a careful study of the lens and deeper structure. The sectors of the lens were too plainly seen even for her time of life, and in O. D. a few opaque spicula were seen shooting toward the posterior pole from the lower and inner quadrant, far out in the periphery of the lens. The nerve was apparently healthy, but in the anterior plane of the vitreous a strong convex lens revealed a fine veil-like web with innumerable fine dark points distributed through it. Through it the fundus seemed simply hazy. No unpleasant symptoms followed the instillation of the atropia. On the 16th of August the misty vision had quite disappeared and $V = \frac{6}{6}$? (with dif.). Sept. 2d she returned after a drive through the Park facing a cool wind with, in O. D., intense photophobia, marked periorbital neuralgia, and ciliary redness and tenderness to the touch. T. *n.* The pupil was narrow and iris discoloured and fixed, *i. e.*, no reaction with change of light and shade. A *four-grain* solution of duboisia was instilled and revealed a broad firm synechia binding the lower pupillary margin to the anterior capsule. She was directed the same solution to use at home every three hours. The pain was very rapidly reduced, and in two days the synechia had torn loose. The eye became rapidly quiet, the duboisia being stopped on the 5th. She complained bitterly of the drops. During their continuance she felt weak, had dry and hot skin and throat, with marked giddiness.

The attack had caused marked diminution of sight in the right eye, but this slowly improved until Sept. 13th, when she had a relapse of the iritis with synechia, which during the following six weeks was repeated in milder attacks one of which occurred in the left eye, each time accompanied with the formation of delicate synechiæ but which each time were torn loose by a mydriatic. Owing to the distress the duboisia had caused she was allowed a solution of atropia instead of the duboisia to use at home.

This worked well during the first relapse, which in a few days had quite disappeared. On Oct. 1st she returned with a second relapse in the right eye. The atropia had caused decided increase in the pain, and the tension was increased. T. = +1. A fine synechia had again formed, causing irregular dilatation of the pupil under the mydriatic.

She was suffering very great pain, and was very sure it had been aggravated by the atropia. A solution of eserine was instilled into the eye, but so far from affording relief led to very greatly increased suffering. Two leeches were now applied to the temple, with immediate relief from the intense suffering, but the following day there was much dread of light. T. +1—ciliary tenderness with constantly dull pain in the eye with occasional spurts of perorbital neuralgia. The synechia was still present, ciliary redness well-marked, cornea transparent, anterior chamber narrower than in left eye. The possible necessity for iridectomy was pointed out. Not caring to risk a second application of the eserine after the experience of the evening before, I instilled a two-grain solution of duboisia gtt. 1 into the eye and sat down to await results. In half an hour the dull pain in the eye grew better, and the instillation was repeated three times within the next twenty-four hours. The eye was then found free from pain, the ciliary redness less marked, anterior chamber same as in left eye, and the synechia had *torn loose;* the tension was normal. During the following two months there were three recurrences of the iritis, all treated with the duboïsia, but there was no return of the glaucomatous symptoms.

At the present writing the eyes have been well for two months, O. D. $V=\frac{6}{6}$? O. S. $V=\frac{6}{6}$.

I am fully aware of the small value to be attached to a single case regarding the action of any drug, but this one has, nevertheless, seemed of sufficient importance to be placed on record. In two cases of chronic iridocyclitis I have used the duboisia without any increased tension following, but atropia has been used in a great number of similar cases without producing ill results.

From the foregoing the following conclusions seem justifiable.

1. That in solutions not stronger than two grains to the ounce duboisia sulphate is free from danger.

2. That the two-grain solution of duboisia sulphate more rapidly paralyzes the ciliary muscle than a four-grain solution of atropia sulphate.

3. That the duration of its effect is less than half that of atropia sulphate.

4. That the preparations now in the market are more liable to irritate the conjunctiva than neutral solutions of the sulphate of atropia.

5. That in the treatment of inflammations of the eye duboisia is quite as useful as atropia, and may therefore be used as a substitute.

In concluding this paper I desire to express my obligations to Dr. Gordon M. Christoni for his careful aid in selecting from my case-book and tabulating the cases corrected under duboisia.

ARTICLE XI.

CASE OF UTERINE FIBROID TREATED BY ERGOTINE INJECTIONS, AND FINALLY REMOVED BY MEANS OF THOMAS'S SCOOP. By MARY PUTNAM JACOBI, M.D., of New York.

Mrs. S., æt. 42, mother of nine children, of which the youngest is eight years old, consulted me on July 3d for menorrhagia and metrorrhagia of five years' standing. Intense anæmia had been developed in consequence of the repeated and prolonged hemorrhages, and the skin of the patient had a subicteric tint, which from time to time deepened to a real jaundice hue. She was subject to attacks of aphonia, which, singularly enough, did not coincide with periods of hemorrhage, but alternated with them; the voice being regained as soon as the flow set in. For this aphonia, even more singularly, the patient had received, during six months, local treatment of the larynx at the clinic of a specialist.

A year before consulting me, Mrs. S. had been sent to the clinic of an eminent gynæcologist, and, as far as I could understand from her report, the hemorrhage had been ascribed to granulations, which were then removed. After this, she was better for a little while, but all symptoms soon returned, and at the time of consulting me, uterine hemorrhage had been going on for a month, and still persisted. It was unattended by pain.

Physical examination of the uterus disclosed two principal facts. The uterus, which was entirely in place, was, to bimanual palpation, considerably enlarged, while the sound only penetrated to the depth of eight centimetres. No irregularities of outline were discoverable in the uterus, either externally or internally. The cavity was moderately dilated. The dull wire curette passed over the fundus of the cavity, occasioned considerable bleeding, but removed no distinct granulations. The bleeding was arrested by swabbing with nitric acid diluted with equal parts of water.

On the 10th of July I saw Mrs. S. again. The hemorrhage had not returned, and she was feeling better, but had lost the use of her voice, so that she could scarcely speak above a whisper. She received a prescription of ergot and gallic acid for the menstrual periods, and I lost sight of her again until the 20th of October. At this date the results of the examination were exactly the same. The internal administration of ergot had had some, but not a very marked, effect upon the menorrhagia, but there had been no intermenstrual hemorrhage. It was evident that the diagnosis lay between a simple hypertrophy of the womb and a mural fibroid, with much greater probability of the latter, on account of the shallow depth of the cavity as compared with the evident enlargement of the uterine walls. I proposed the administration of ergotine hypodermically, and to this the patient consented.

Between the 20th and the 27th, six hypodermic injections were given, each containing one grain of ergotine dissolved in four minims of glycerine, four minims of water, and one minim of carbolic acid. The first three injections caused no pain, and very little local induration. With the fourth, the patient began to have uterine cramps, which lasted for an hour or two after the injections. The local indurations caused by the injections were also very painful. On the 29th the seventh injection was given, and after that the patient did not return until the 8th of November. During this interval she menstruated, but the flow lasted only four days, and was not too profuse. During its continuance she had taken twenty grains of gallic acid every three hours. Feeling much encouraged by this diminution of the menorrhagia, she submitted to the eighth injection, and received two more during the course of the following week. The pains consequent upon these injections became always more severe, and on the 15th, two or three days after the last injection, flowing returned, accompanied by a spontaneous access of pain. This lasted for three days, was expulsive in character, and so violent that the attendant physician could only control it by hypodermic injections of morphia. Finally, on the afternoon of the 18th, the patient "felt something slip down in her belly;" at the same moment the pains abated and the hemorrhage ceased. Summoned in haste, the attending physician discovered a tumour projecting from the cervix uteri, and at once recognized that it had been forced down by means of the ergot. I saw the patient on the 22d. I then found a tumour projecting from the cervix, whose inferior extremity was the size of a turkey egg. The finger could easily be swept all round the tumour between it and the cervix, but the pedicle could not be reached. The fundus of the uterus was not depressed. The visible surface of the tumour was partly vascular, bleeding on touch; partly covered with spots of superficial gangrene. A sanious discharge oozed constantly from the uterus.

On the next day I removed the tumour, with the assistance of Dr. Krohlpfeiffer, the attending physician, Drs. Bopp, Strauss, Gunckin, and Cushier. As soon as the patient was etherized, it was easy to draw down the tumour, and to invert the uterus sufficiently to bring the tumour almost entirely outside of the vulva. By means of Thomas's scoop, I then, in a few minutes, and without the slightest difficulty, cut through the base of the tumour, less than an inch below its point of attachment to the fundus uteri. The tumour was almost regularly ovoid in shape, so that its base was very nearly as broad as the inferior free extremity. But the base was composed of such dense, non-vascular tissue that absolutely no bleeding took place after the section, and only a trifling oozing after the replacement of the uterus.

The tumour measured seven and a half inches in its longer circumference, and six and a half in its shorter. As already stated, a portion of the free extremity was superficially vascular, and the remainder was covered with green spots formed by superficial gangrene of the mucous membrane. On making a longitudinal section on the left of the tumour, extending upwards from the vascularized portion of the free extremity, a strip of cavernous tissue was found, composed of large sinuses filled with dark coagula. These sent projections into smaller sinuses. This vascular strip was one-quarter of an inch broad, and extended to within one inch of the base. Its depth from the surface measured one-half of an inch. Below the clot, the tissue was uniformly white, and composed of fibrous bands, which formed a coarsely reticulated tissue.

Three longitudinal sections were made on the posterior aspect of the tumour. The section the furthest to the right passed, at almost its middle, through a ring, one-quarter of an inch in diameter, of vascular sinuses filled with dark red coagula. The second section exhibited only two or three minute points of coagulum. The third plunged, at the depth of half an inch below the surface, into a group of largely dilated sinuses filled with coagula. All these sinuses were lined by a smooth, transparent endothelium, demonstrated to be such by treatment, in the fresh state, with nitrate of silver.

Thus everywhere the bloodvessels, or rather blood sinuses, were found on the surface and towards the free extremity of the tumour. The base and the centre were bloodless. The vessels did not run from the base to the free extremity, but the reverse. They must, therefore, have been developed from the mucous surface, in other words, from the vascular layer of the endometrium, and not from the sinuses of the uterine wall. This development into sinuses was in accordance with the general tendency to imitate the uterine type of structure which characterizes uterine fibroids. Mural fibroids are often described as developed in the fibrous stroma of the uterine parenchyma, and becoming submucous, sessile, or pedunculated, by growing *towards* the uterine cavity. But the arrangement of bloodvessels described in our case would imply that the tumour began in the embryonic cells lying under the endometrium, and which are normally destined to furnish material for the menstrual decidua.[1] The cavity appeared to be normal in length (eight centimetres), until the tumour began to descend from the fundus.

The tumour, therefore, had not grown from above downwards, but from below upwards. Successive layers of new tissue must have been constantly pushed upwards towards the fundus of the uterus, as still more layers developed in the embryonic stratum under the endometrium. Thus, the zone of proliferation would have been intermediate to the two extremities, analogous to the zone of growth lying between the diaphysis and epiphysis of bones. On this account the base, being almost the oldest portion of the tumour, was, therefore, the least vascular: *anatomical fact, explaining the apparently anomalous facility with which could be removed, without hemorrhage, a tumour whose surface had been bleeding profusely for five years.*

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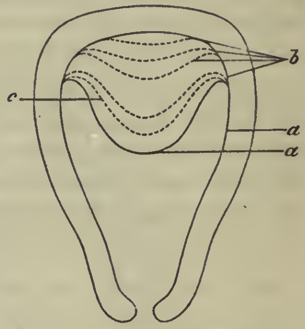
[1] See the paper entitled "Membranous Dysmenorrhœa," by Drs. George and Frances Hoggan, in Arch. für Gynæk., Bd. x.

Microscopic examination confirmed the inferences drawn from the disposition of the bloodvessels.

The surface of the tumour was found to consist of a condensed network of fibres, generally non-nucleated. Immediately below the surface, the fibres were infiltrated with small round cells. Below this, in various parts of the surface of the tumour, was found a strip of microscopically cavernous tissue, composed of a very coarse reticulum of fibres, whose meshes were filled with extravasated blood. Below this strip of hemorrhagic effusion was a band of muscular fibres, arranged in parallel and concentric layers, moderately infiltrated with embryonic cells, which became more abundant in the deeper part of the surface section, until, at its deepest, they almost entirely replaced all fibrous tissue, and formed a zone exclusively cellular. This zone could be traced entirely around the surface of the tumour, at the depth of from one-eighth to one-fourth of an inch from the mucous surface. Sections taken below this zone, *i. e.*, towards the centre of the tumour, were everywhere composed of bands of nucleated muscular fibres intersecting each other at various angles, intermingled with patches of young conjunctive tissue, or with bands of mature conjunctive fibres. At the centre of the tumour the tissue was most coarsely fibrous, forming bands visible to the naked eye. Throughout this muscular fibrous tissue, cells were sparingly disseminated, almost disappearing from sections taken at or near the centre. Sections taken from the base of the tumour exhibited the same musculo-fibrous stroma and sparse development of cells. The latter portions showed only two or three minute bloodvessels, provided with muscular coats.



Schematic. *a, a.* Mucous surface of tumour, continuous with mucous surface of uterine cavity. *b.* Germinal layers of cells, successively effaced during growth of tumour and formation of stroma. *c.* Last germinal layer, persisting at time of removal of tumour.

Thus, the microscopic examination showed that the germinal tissue of the tumour was everywhere near the surface, accompanying the bloodvessels, whose surface distribution was visible to the naked eye, while the tissue below this germinal zone, constituting both the core and the base of the tumour, consisted of mature and non-vascular stroma.

The above diagram may serve to roughly represent the theory of the development of the tumour, which we have deduced from the details of its structure as above described. The theory differs essentially from that which attributes the development of uterine fibroids to irritation of the muscular fibres of the uterine wall, and which describes the peduncle of polypi as bearing the bloodvessels from the wall into the tumour. According to this theory, the muscular fibre in the peduncle gradually atrophies and the vessels are obliterated.[1] According to the theory we have advanced, the non-vascularity of the peduncle or base is due to the fact that this part is the furthest removed from the mucous membrane in whose vessels the bloodvessels of the tumour originate. This theory of development in the germinal cells lying underneath the endometrium could not apply to such tumours as are completely imbedded in and surrounded by uterine parenchyma, nor which develop under the peritoneum.[2]

The expulsion of the tumour was effected by a process precisely analogous to that of parturition. The cervix was thinned, and dilated at the expense of its length, the fundus being spread out and flattened down upon the tumour—following it without inversion, as it would follow an ovum. On the day after the operation, the cavity of the uterus measured two and five-eighths inches, sensibly the same as before the removal of the tumour, but the walls seemed somewhat hypertrophied. Carbolized intra-uterine injections were made twice a day for a week, and the patient recovered without the least rise of temperature or other bad symptom.

ARTICLE XII.

CASE OF EXTENSIVE TRAUMATIC INJURY OF THE SKULL, ABSCESS OF THE BRAIN, RIGHT HEMIPLEGIA, APHASIA, RECOVERY.

By A. LIEBIG ELCAN, M.D., of Covington, Tenn.

APRIL 14, 1878, I was called to see Claude B—, aged 5 years, soon after he had received an injury upon the head, caused by a horse pawing him with his forefoot. I found him in an insensible condition, breathing slow and laboured, pupils contracted, pulse soft and compressible, though rather slower than natural, and extremities cold. The first wound in the scalp was about one and a half inches from the median line on the left side, the second about half an inch from the first, and the third about half an inch from the second in a corresponding line. Two of these wounds had penetrated the left parietal bone, through one of which a small portion of broken down brain matter escaped. There was also a fracture extending from one of these punctures to the other without any depression of bone that could be discovered.

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[1] Virchow, Die Krankhafte Geschwulste.—Cohnstein Frauenkrankheiten, pp. 122–124. Beigel, Frauenkrankheiten, p. 405.

[2] It will be of course noticed that, in the above description, no distinction is made between the so-called "capsule" and the tumour proper, according to the description commonly given—the tissues extending one-eighth to one-fourth of an inch from the surface, and including the cellular zone, would be referred to the capsule, composed of transformed mucous membrane that had been pushed before the tumour during its outward growth. I have not described this capsule because the unbiassed examination of the entire neoplasm in successive sections, as above described, suggested the view stated in the text; namely, that the growth began in embryonic cells belonging to the inclosed tissue, and thence proceeded inwards.

An exploration of the punctured wounds did not reveal the existence of any depressed or detached fragments of bone, but appeared to be simply a clean puncture without any spicula of bones being driven in.

I called Dr. T. W. Roane in consultation, and, after a careful examination of the case, he agreed with me in regard to the nature and extent of the injury. There being no coma or other symptom indicating compression, but very marked symptoms of concussion of the brain, we concluded to defer any operative measure until the developments of the case demanded it, and directed our treatment to the relief of the shock and concussion of the brain, and to limiting the meningeal inflammation which was likely to follow upon such an extensive injury of the brain. Dr. W. E. Rogers, who saw the case about thirty-six hours after the accident, concurred in the propriety of the treatment adopted.

There was very little meningeal inflammation, as indicated by the general symptoms. The patient suffered but little pain, rested well, bowels regular, no difficulty in voiding urine, and his intelligence was perfect.

The wound healed kindly, and everything seemed to be progressing favourably until about the 1st of May, when I discovered an irregular flattish tumour occupying the lower portion of the wound, which had a distinct pulsation. The pain now became very severe. Partial hemiplegia of the right side followed. There was some impairment of speech, and symptoms of compression of the brain gradually developing into coma necessitated an operation, which was performed May 10.

Dr. Roane made a crucial incision three inches in length, exposing the fracture, which proved to be much more extensive than we had supposed, extending about one and a half inches below the lower puncture in the direction of the anterior angle of the parietal bone. We raised the depressed bones with the elevator, and approximated their edges.

The treatment was strictly antiphlogistic, viz., cold water dressing to the wound, restricted diet, perfect quiet in a dark room, and tinct. verat. viride "pro re nata," for the first few days; followed by a more generous diet and tinct. ferri chlor.

The wound healed over a portion of its extent, but the bones which were elevated became displaced, and the brain, covered by its investing membranes, protruded through the fissure in the skull, forming a considerable fungus, which pulsated synchronously with the action of the heart.

I attempted to repress this protrusion by systematic compression, hoping by this means to secure the coaptation of the edges of the bone and their union, but in this I signally failed.

The fungus cerebri continued to enlarge, presenting a shining and almost transparent appearance. Hemiplegia of the right side, which at first was only partial, now became complete. The tongue, on being protruded, deviated to one side. The aphasia became complete, so that he could not articulate a single distinct sound. His intelligence, however, remained perfect, bowels regular, appetite good, no difficulty in voiding his urine, rested well, suffered very little pain until about the 25th of June, when the pain became so intolerable that he could no longer bear the compression from the adhesive strips. The portions of bone which were elevated at the first operation could be distinctly felt, and seemed to be detached, as they were freely movable. The wound now assumed an unhealthy condition. There was a constant watery exudation from the cerebral fungus; his nervous system began to fail from the constant pain and drain upon him, together with the loss of sleep, and there was no other alternative but to remove the detached bones. I notified Dr. Roane of his condition, and on July 7th, after stating to his mother the dangers of the operation, and the probability of the patient dying under it, and getting her consent, we operated by making a "T" shaped incision three by five inches, so as to expose the whole extent of the fracture. The portions of bone which were elevated at the first operation had failed to unite, and were easily removed, leaving an opening through the parietal bone one and a quarter by two and a half inches.

After removing all the spicula of bone, and just as we were preparing to close the wound, we detected, to our great surprise, a large abscess in the brain, which, on being opened, discharged from six to eight ounces of pus of a thin whitish character, leaving an enormous cavity in the brain, at the bottom of which could be felt the bones forming the floor of the skull.

The operation was an extensive one, involving a considerable loss of structure, and we were apprehensive that he might sink from exhaustion, but he stood the operation well, rallied from the effects of chloroform, took some stimulant, and seemed more comfortable than he had been for some time. After evacuating the contents of the abscess we filled the cavity with lint, and closed the wound with sutures and adhesive strips, leaving a space open for the removal of the lint, applied cold water dressing to the wound, gave tinct. ferri chlor. and enjoined perfect quiet in a dark room. The cavity in the brain rapidly refilled, and in forty-eight hours after the operation the brain again began to protrude through the opening in the skull to such an extent that it was necessary again to resort to adhesive strips to prevent any further protrusion. The wound was dressed with a solution of carbolic acid.

The progress of the case was slow but most gratifying, notwithstanding the excessively hot and enervating weather of July and August—the thermometer ranging from 80° to 96° F. The paralysis gradually improved, the improvement being most rapid in the lower extremities. The aphasia, which had been complete for several months, by constant practice, at first in the simplest sounds, was overcome, and now (Feb. 1879, nearly ten months since the accident occurred) he can pronounce almost any word, but there is a want of distinctness in his articulation, which, however, would not attract attention. His health is excellent, and his general condition such that he has not required either medical or surgical attention for the last four months.

The treatment of the case embraced a period of about five months, and a great many of the details have been necessarily omitted in order to condense the report as much as possible without rendering it incomplete.

It is now about eighteen months since the accident, and the little boy is in the full enjoyment of all his faculties.

This, so far as I have been able to ascertain, makes the eighth case which has been reported in which pus has been evacuated by the use of the trephine and incision into the substance of the brain; the other cases have been recorded by Holden, Dupuytren, Detmold, Noyes, Clark, Weed, and Maunder. Of these cases Detmold's was only partially successful, the patient, though temporarily relieved, dying seven weeks subsequently; as to the result of Maunder's case, we have no information. The other five cases all appear to have terminated in recovery.

ARTICLE XIII.

METASTATIC TENONITIS IN DIPHTHERIA.

By ALBERT G. HEYL, M.D.,
Ophthalmic Surgeon to the Episcopal Hospital, Philadelphia.

I WISH to call attention to a rare complication of diphtheria, which is I believe unrecognized in literature.

CASE.—On Aug. 4, 1879, I was asked to see in consultation with my friend, Dr. Hiram Gold, of this city, Mr. P., aged 53. Dr. Gold had been called to see the patient on the 26th of July, and found him suffering from diphtheria: a large diphtheritic patch was seen involving the left half of the pharynx. The usual remedies had been applied, the patient remaining in the house; in a few days, however, he became so ill that it was found necessary to insist that he should go to bed. One week after commencing treatment a large swelling was noticed under the left sterno-cleido-mastoid muscle, and simultaneously the left eye began to swell and project from its socket. This swelling rapidly increasing, I was asked to see the eye, and accordingly visited the patient on the morning of August 4th. The patient was a well-built man of medium height; a single glance showed that he was dangerously ill, and a few moments' examination corroborated the impression that he was in a typhoid state. Marked mental hebetude, skin hot to the touch, a hard dry brown tongue were noted; under the left sterno-cleido-mastoid muscle a tense brawny swelling existed, evidently due to the enlarged lymphatic glands. The left eye at once attracted attention; marked protrusion of the ball was present; patient was unable to open the lids, which barely covered the cornea. Conjunctiva was injected and chemotic; the pupil was so small that a satisfactory view of the fundus could not be obtained; atropia was therefore ordered to be dropped in; cooling applications to be made to the eye, and the tonic and stimulant treatment vigorously carried on. The following day an ophthalmoscopic examination was made; the media were clear, fundus quite visible; there was a slight indistinctness of the nerve margin, but nothing else abnormal was seen. The same treatment was continued, with the exception of substituting poultices for the cooling compresses. In a day or two the swelling began to subside, the injection and chemosis to disappear, and in a few days more the eye retreated to its normal position; the eye affection lasted altogether about one week. I made one more ophthalmoscopic examination, found nothing abnormal, and then left him in the hands of Dr. Gold, under whose judicious treatment he has made an excellent recovery. I saw the patient on Dec. 1, 1879; vision of R. E. was $\frac{20}{20}$, of the L. E. $\frac{20}{40}$, fundus was not clearly visible in either eye with the ophthalmoscope owing to the small pupil; atropia was not dropped into the eyes, as further examination was not deemed necessary.

It will I think be profitable for us to take the bearings of this case and to endeavour to arrive at some conclusion as to its character.

We have then for consideration a case of diphtheria with marked typhoid symptoms, characterized by acute inflammatory swelling of the deep cervical lymphatics of the left side; simultaneously with the appearance of the latter, an abnormal condition of the left eye began; this abnormality was an exophthalmos, gradually increasing for a few days, then gradually disappearing without the occurrence of suppuration; the duration of the whole process being something over one week. Great injection and chemosis of the conjunctiva were present. The character of this case was not at first apparent; three different conditions, all characterized at the onset by such symptoms as existed in my case, suggested themselves.

1. Orbital cellulitis. This condition generally ends in suppuration; my case ended in resolution. Orbital cellulitis in a case of this kind, of course might occur, but it would be a mere coincidence. Any diagnosis based upon a direct connection between the disease and its complication would doubtless be more correct. In view then of the termination of this case and of a more probable explanation, I do not think that this was a case of orbital cellulitis.

2. Thrombosis of the cavernous sinus. In this condition we find a steadily increasing exophthalmos, pulsating so as to simulate an orbital aneurism; a turgid condition of the angular and frontal veins; the course of the disease chronic when not interfered with. Only at the commencement of such a case as mine would the possibility of thrombosis be considered in forming an opinion. In the light of the sequel a different explanation must be sought.

3. This case may have been, and in my opinion probably was, an inflammation of the capsule of Tenon. The capsule of Tenon is a sac-like structure which invests a large part of the eyeball; its function is that of a lymph reservoir, and as it will help us to understand this case I shall say a word or two about the lymphatics of the eye. The lymphatic systems of the eye are two; an anterior, including the lymphatics of the conjunctiva, eyelids, and cornea, with the anterior portions of the sclerotic; with this system we are not specially concerned, and I therefore pass them without further mention. The posterior system which includes the space of Tenon has peculiar interest for us. It has this peculiarity: it consists of a number of lymph spaces, communicating one with another, and also with the lymph spaces of the brain. I will briefly mention the members of this system: first, there is the intervaginal space or the space lying between the sheaths of the optic nerve; secondly, we have the supravaginal space, which is nothing more than a posterior part of the space of Tenon; thirdly, the latest investigations of Axel Key, Retzius, Schmidt, and others have demonstrated a space lying between the inner sheath of the optic nerve and the nerve itself; this has been called the perineural space. The

perichoroidal space lying between the choroid and sclerotic comes next, and last of all comes the space of Tenon already mentioned. Further, we may inject the space of Tenon from the intervaginal space by two routes. 1. *Via* the perichoroidal space. 2. *Via* the supravaginal space; further still, not only will the injecting fluid find its way into these lymph spaces, but also into one of the lymph spaces of the brain, and finally into the deep lymphatics of the neck. The connection of the space of Tenon with the deep lymphatics of the neck is therefore demonstrated; the application to the case already described must be clear. Let me state the data once more. An attack of diphtheria, acute inflammation of the deep cervical glands, acute inflammation of the capsule of Tenon.

The explanation is extension of inflammation from the diphtheritic ulcer to the deep cervical lymphatics, and thence to the capsule of Tenon. In other words a metastatic inflammation of the capsule of Tenon.

Two questions suggest themselves in this connection.

1. Is there any warrant in clinical experience for this explanation? For an answer to this we may search the clinical records of metastatic inflammation of the eye. We shall then find that there is one group of cases explained by the presence of embolus, another by the supposition of marasmic thrombosis (H. Schmidt), another group still, occurring in certain cases of septicæmia, for which no explanation has been given. In these cases we find no answer to our question; according to Wecker,[1] however, there exists yet a class of metastatic ocular inflammations entirely distinct from those just mentioned: cases of this kind occur in connection with intracranial disease, more particularly cerebro-spinal meningitis, the metastasis taking place through the agency of the lymphatic connections described. In these cases the starting-point of the metastasis is intracranial. I venture to go a step further. I believe it possible for the metastasis to start from an extracranial source, the route of transmission being the lymphatics. The basis of this belief is as follows: Certain eye affections, to be mentioned further on, occur in erysipelas of the face; the nature of the connection between the two has never been adequately explained. If, however, we study erysipelas clinically,[2] we find that the lymphatic vessels and glands are invariably implicated in the inflammation; so marked is this condition that there is the highest authority[3] for the supposition that the primary and essential characteristic of erysipelas is a capillary lymphangitis. Whether this supposition be true or not, the clinical fact above mentioned is undisputed; now couple this fact with that of the anatomical connection between the deep cervical lymphatics and the lymph spaces of the eye, and we at once see how the inflammation may ascend to the eye.

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[1] Graefe and Saemisch, Handbuch Ges. Augenheilkunde, vol. iv. Theil ii. 634.

[2] Niemeyer, Text-Book of Practical Medicine, vol. ii. p. 410.

[3] Billroth, Chirurgische Pathologie, p. 288, vide also p. 351.

So much for the general statement. A few cases by way of illustration will doubtless be of interest. The first case I shall refer to is one described by Imre.[1]

The patient, a girl aged 25, was admitted to Professor Schulek's clinic in Buda Pesth, April 2d, 1875. She had been seized four days previously with violent pain in the right eye and right side of the face. On admission there was excessive exophthalmos; the lids were œdematous, red, and tender to touch. The vision of the eye was normal, as was also the interior of the eye. The erysipelas began to spread, involving the whole side of the face and temple; two days after admission the exophthalmos began to subside; the erysipelas spreading over to the left side of face and neck; two days later it had about disappeared. This was considered as being most likely a tenonitis, but no explanation of it was attempted.

This eye condition is very similar to that in the case which forms the subject of this paper, and a similar explanation will apply to both.

A second group of eye affections in erysipelas presents the following history: A case of erysipelas of the face applies for treatment. As the disease subsides the patient discovers that his sight is affected; sometimes there is total loss and sometimes partial loss of sight, central scotoma with partial destruction of sight has been noted. Ophthalmoscopic examination reveals nothing of moment, unless it be the whiteness of the optic disk and smallness of the vessels (Pagenstecher).[2] Gradually, however, undoubted atrophy manifests itself. Professor Förster,[3] in commenting on these cases, says: that if erysipelas verum were the cause of the atrophy [he seems to imply a doubt] his explanation would be a direct propagation of the inflammation along the sheaths of the vessels "eine directe Fortpflanzung des entzündungs-processes längs der Gefässcheiden bis auf die Arteria centralis Retinæ."

With regard to the doubt implied by Förster, I refer to the addendum to this article. With regard to the explanation it seems to me that there is a far better one; one more in accord with the clinical history of erysipelas. My explanation would be that the blindness is due to an inflammation of the retrobulbar lymph spaces involving secondarily the nerve fibrils themselves. In other words, a metastatic inflammation starting from an extracranial source; the route of transmission being the lymphatics. That retrobulbar neuritis may exist without visible intraocular change is a well-established clinical fact.

2. If it be granted that inflammation may take place in the eye in the manner described, is it possible for it to be confined to a single lymph space? would it not necessarily involve them all? This question cannot in the present state of our knowledge be fully answered; clinical experience, however, teaches this much. Tenonitis may exist without involving the interior of the eyeball; suppurative choroiditis may exist without in-

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[1] Klinische Monatsblätter für Augenheilkunde, June, 1876.

[2] Ibid., vol. viii. 207.

[3] Graefe and Saemisch, Handbuch Ges. Augenheilkunde, vol. vii. Th. v. 164.

volving, so far as can be told from the external appearances, the space of Tenon; in this latter case we can hardly suppose that the perichoroidal space escapes, so that we may then at least consider it as quite probable that inflammation may exist in either of two lymph spaces lying in juxtaposition without involving in my case the other. A more difficult part of the question, at first sight, is this: were the retrobulbar spaces, which intervene between the spaces of Tenon and the cervical lymphatics, not involved? In the present state of our knowledge it is impossible to speak absolutely about this. I am not prepared to say that the slight indistinctness of the nerve margin was indication of retrobulbar disease; it may or may not have been. These facts, moreover, must be borne in mind in this connection; the retention of normal sight does not necessarily imply that the optic nerve or its surroundings are in a perfectly normal state; it is well known that it is quite possible in well-marked cases of "choked disk" to find vision $\frac{20}{20}$, and further, as has already been stated, retrobulbar neuritis may exist without any perceptible change in the fundus. Perhaps oftener than we are accustomed to think, retrobulbar inflammation may arise and subside without giving one single sign by which it could be discovered.

We have had then presented for our consideration a case of diphtheria presenting an inflammatory affection of the cervical lymphatics and an inflammation of the capsule of Tenon. The space of Tenon is a lymph space having anatomical connection with the cervical lymphatics; therefore I believe that these two localized inflammations are part of the same process occurring in the same anatomical system.

Addendum.—Reference is made in the text to a doubt implied by Förster in speaking of certain eye affections said to have occurred after erysipelas. I wish briefly to consider the foundation for this doubt. There are very few cases of the kind reported, and Förster seems inclined to doubt them because the patients were not under the eye of the same observer previous to and during the attack of erysipelas; the doubt is implied, not directly expressed. The cases referred to by Förster are two reported by Pagenstecher, one by J. Hutchinson,[1] and one by Jaeger.[2] I will leave Jaeger's case out of consideration, because its history, though well worked out, is rather negative as regards the question before us. With regard to the other cases there can be no doubt that the patients were attacked by erysipelas; the history is too plain on this point to admit of a doubt; nor can there be any doubt as to the blindness of the patients. The only questions about the cases were then: 1. Was not the patient in reality blind in one eye before the attack of erysipelas and not aware of it? All oculists know that this is quite possible. The direct statements of the patients, however, are not only against this supposition, but also the character of the eye affection, which had all the indications of a recent origin.

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[1] Ophthalmic Hospital Reports, vol. vii. p. 35.

[2] Ophthalmoskopischen Atlas, Fig. 51.

2. Allowing that the blindness did occur after the erysipelas, was there any connection between them? If there was not, then the eye affection was a mere coincidence; but we are not justified in any such assumption so long as any reasonable explanation can be given as to the manner in which the one might arise from the other. Such an explanation has, I venture to think, been given in the text. I have thus thrown into general statements my opinion as regards Förster's implied doubt. Space does not allow anything but a condensed argument. Those who wish may consult the original reports of the cases.

ARTICLE XIV.

GUNSHOT WOUND; BALL ENTERING LEFT SIDE OF THE NECK, PASSING THROUGH SPINAL COLUMN AT SEVENTH CERVICAL AND FIRST DORSAL VERTEBRÆ AND LODGING IN RIGHT TRAPEZIUS MUSCLE. PECULIAR FEATURE OF THE LUNGS FOUND ON POST-MORTEM.

By JUNIUS L. POWELL, M.D., Assist. Surgeon U. S. Army, Post Surgeon to Fort Griffin, Texas.

CHARLES McC., æt. 21, private, Co. A, 22d U. S. Infantry, on 29th of April, about 8 P. M., while in the town of Griffin, near Fort Griffin, Texas, received a shot from a Colt's pocket pistol, calibre 38. The ball entered the left side of the neck on posterior border of sterno-mastoid muscle above the clavicle, and was extracted from the substance of the trapezius muscle of the right side just above the superior angle of the scapula; on its passage it entered the cavity of the chest just enough to produce an incomplete fracture of neck of first rib, and passing over its upper surface carried away the pedicle of first dorsal vertebra, its left side nearly severed the spinal cord, a mere thread of the anterior portion remaining intact, and then carried away a greater portion of right lamina of the same vertebra.

I saw the man in fifteen or twenty minutes after he was shot. His general aspect was such as is usual in case of one who has sustained some sudden and serious injury. Paralysis of lower extremities ensued, both motor and sensitive, with paresis of upper extremities and numbness of right hand and arm. On the morning of my usual visit to the post hospital, between 8 and 9 A. M. (April 30), his intellectual faculties were perfectly clear, complained of no *pain* in any part of his body, but said he had a feeling of soreness about the back of his neck. Pulse 75, temp. 102⅕°. Respiration easy and not abnormally accelerated. By noon all his symptoms had increased in gravity, and one hour later he was unconscious. At 5.05 P. M. he died. One hour before death his pulse was 130, temperature 110° in left axilla.

Autopsy, in addition to conditions which have been cited above, revealed considerable *irregular* congestion of both lungs, greater perhaps at their apices. By irregular congestion is meant circumscribed spots of congestion which had invaded *all* parts of the lungs, and which were separated by somewhat equal areas of healthy lung tissue.

Aside from the aspect of the lungs upon removal from the chest twelve hours after death, the case does not seem to present any unusual features, but in the instance of these organs there is something calculated to arrest attention, and while the facts recorded may not point indisputably to the injury sustained by the sympathetic as the sole factor in determining the condition met with, the results of physiological research would seem inevitably to point in that direction for an elucidation in part at least of the phenomena before us. Let us consider the distribution of the sympathetic in the parts we have under consideration—

> "From the cervical portion of the sympathetic the three cardiac nerves arise and pass to the heart, entering into the formation of the cardiac plexus. The superior cardiac nerve arises from the superior ganglion; the middle nerve, the largest of the three, arises from the middle ganglion or from the sympathetic cord when this ganglion is wanting; and the inferior nerve arises from the inferior ganglion or the first thoracic. These nerves present numerous communications with various of the adjacent cerebro-spinal nerves, penetrate the thorax, and form the deep and the superficial cardiac plexus and the posterior and the anterior coronary plexus. In these various plexuses are found numerous gangliform enlargements, and upon the surface and in the substance of the heart are numerous collections of nerve-cells connected with the fibres which were first accurately described and figured by Dr. Robert Lee."[1]

Independently of their connection with the terminal branches of the great pneumogastric, whose office seems to be well defined as a medium of communication between the respiratory organs and the automatic respiratory centre in the medulla oblongata, it will be seen from the above how richly supplied the thoracic viscera are with fibres from the organic system of nerves, and how wide-spread are the communication or anastomoses of the filaments of these latter with those of the cerebro-spinal system in this situation. The task of determining the part played by each of these systems, cerebro-spinal and sympathetic, in governing vaso-motor movements is both interesting and difficult, and is well worthy the careful study of physiologists.

It is a fact well established by experiments that, in the mammal, division of the sympathetic on one side of the neck causes a dilatation of the minute arteries of the head on the same side, and an increased supply of blood to the parts. It is also true that division of the sciatic nerve in a mammal causes a similar dilatation of the small arteries of the foot and leg, and so on with reference to the division of other nerves distributed to a given part, whether they be cerebro-spinal or sympathetic; hence it is natural to conclude, that—

> "In various parts of the body certain vascular areas stand in such a relation to certain nerves that the division of one of these nerves causes a dilation of the minute arteries in, and consequently an increased supply of blood to, a corresponding vascular area. These nerves which belong *sometimes* to the sympathetic *sometimes* to the cerebro-spinal system are called vaso-motor nerves."[2]

In McC.'s case the sympathetic was intact in its entire length on the right side; on the left side, it will be perceived by a little reflection, that the inferior cervical ganglion was entirely destroyed by the ball. With all these facts before us, are we warranted in the conclusion that the peculiar condition of the lungs was due either directly or indirectly to the loss of this ganglion? There must have been some special agency in bringing about this irregularly hyperæmic state. Again, can we say, that had the sympathetic been severed at the same point on the right side also there would have been an universal congestion of the lungs, and consequently a more speedy death? To the writer it looks so. Proceeding still further, in a hypothetical way would there have been this *irregularly* engorged condition with one or both sympathetic chains divided at this point, while the spinal cord remained intact? We think so. Indeed, there seems to be nothing to indicate that the cerebro-spinal system had anything to do with the condition we have been discussing, nor are we able to discover by any process of reasoning founded upon the known results of physiological experiment, coupled with the post-mortem facts already narrated, any inhibitory or antagonistic action exercised by the cerebro-spinal upon the sympathetic, a function which we are led to believe by Foster, who has already been quoted, the former exercises over the latter. At any rate such does not seem to be the case in the thoracic cavity.

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[1] Flint, Nervous System.

[2] Foster, Text Book of Physiology.

We have said that beyond the appearance of the lungs there was little in the case which has been reported calculated to arrest attention. The elevated temperature had for the moment escaped our memory. This constitutes another item corroborative of the view we have advanced, we think. It is to be regretted, however, that a record was not taken from both axillæ, and that the state of the left pupil was not observed. Finally, the case is reported in the hope that it may serve to throw some additional light on the obscure field of vaso-motor mechanism.

Fort Griffin, Texas, October, 1879.

Article XV.

Absorption of a Large Fibroid Tumour of the Uterus under the Use of Ergot. By Clinton Cushing, M.D., of Oakland, California.

April 21, 1876, I was sent for to attend Mrs. Jane S., æt. 44, mother of two children, the youngest 17 years of age. The history of the case disclosed that for four years she had been suffering from frequent and profuse uterine hemorrhage, attended at times with considerable abdominal pain, that during that time the abdomen had been steadily increasing in size, and that the general health was becoming seriously damaged. I found her excessively anæmic and so weak as to be almost wholly incapacitated for her household duties. She had been prescribed for from time to time by different physicians, but no one had made an examination as to the cause of the hemorrhage. Upon making an examination, I found the uterus enlarged to the size of that of the fifth month of pregnancy, quite symmetrical in its outline and firm and solid to the touch. Upon passing a sound, I found the cavity measured five inches in length, and that the growth was confined for the most part to the posterior wall. It was evidently a case of interstitial fibroid tumour, and a favourable case for its removal.

I at once ordered her to take a teaspoonful of the fluid extract of ergot night and morning. At the end of ten days severe expulsive pains began in the uterus, attended with a profuse white, flaky discharge from the vagina; the ergot was discontinued, and at the end of four days the pain ceased, when the remedy was again commenced, and again with the same result; and again the need for a temporary discontinuance of treatment until the pain subsided.

The treatment was pursued as above for nearly four months, the uterus during this time steadily decreasing in size, and the watery, flaky discharge at times becoming quite profuse and somewhat offensive. The menstruation came on at the usual time and was profuse, requiring confinement to the bed and the use of cold astringent injections. At the end of four months the uterus was found to be normal in size, the menstruation was normal in quantity, and the strength was steadily improving under the use of iron and wine. She is now at this date, August, 1879, in good health, with no return of the hemorrhage. Her menstrual flow occurs regularly, and is normal.

I wish to place this case upon record as an example of the good effects of ergot upon those cases of fibrous tumours occurring in the walls of the uterus, and giving rise to troublesome hemorrhage. I think there can be no doubt that in every case where the remedy is well borne, it should be given a trial in the class of cases above mentioned before resort is had to surgical measures. It certainly is safer than any of the various operative measures in use. It is claimed that ergot acts better in these cases when given subcutaneously, but I can see no advantage in this method if the remedy is well borne by the stomach.

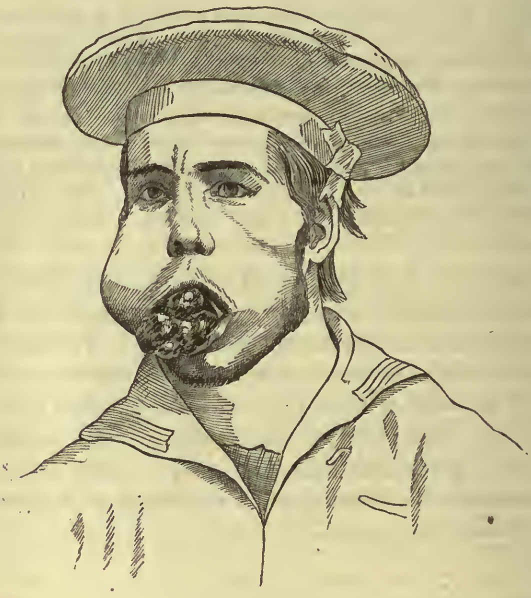
Article XVI.

Central Myxo-Sarcoma of the Right Superior Maxilla; Removal of Entire Maxilla and Portion of Malar Bone. By John L. Neilson, M.D., Passed Assistant Surgeon, U. S. Navy.

Robert F. S., seaman, aged 20, was admitted to the New York Naval Hospital, Jan. 19, 1880, with "Sarcoma of the Upper Jaw," from the U. S. S. "Constellation," to which ship he had been transferred from the U. S. S. "Trenton," at Gibraltar, on the 10th of December, 1879, for passage to the United States.

His history previous to admission, collated from the "Hospital Ticket," which accompanied him, and from the statement of the patient, which is accepted, is as follows, viz.: About the 1st of October, 1879, without any ascertainable cause, hereditary or otherwise, he began to have some persistent neuralgic pain in right upper jaw, radiating into ear of same side and causing some subjective noises and confusion of hearing; about the 15th of November the floor of the right antrum gave way before the protrusion of a tumour, and one week later the growth began to push through an opening made in the alveolus by the removal of a decayed molar; when, Dec. 10th, he was transferred to the "Constellation," the protruded portions were quite small, but from that time to the completion of the voyage, Jan. 19th, the growth of the tumour was exceedingly rapid, as will be seen from the accompanying illustration (Fig. 1), copied from a photograph taken the day after his admission.

Fig. 1.



On admission his condition was as follows: Right side of face corresponding to area of superior maxilla swollen and distorted, the tense integuments of the cheek discoloured and adherent at two points to the apices of nodules which could be felt through the skin; the orbital plate pushed up; the naris encroached upon and almost obliterated; the entire buccal cavity filled with a nodulated and elastic tumour, "having a firm and fleshy feel," that bulged through the mouth, and appeared externally as an offensive, bleeding mass, the size of an orange.

The mouth could be entered by raising and pushing to one side the protruding portion, when I was enabled to introduce two fingers, nearly their entire length, into the cavity of the antrum, seeming to pass between two large lobes, the removal of my fingers being followed by a stream of blood and particles of decayed bone: the odour was simply intolerable; no satisfactory exploration posteriorly could be made, but by the use of a probe, it was ascertained, with some certainty, that the almost immovable mass filling the left cavity was a portion of the original tumour, which had bulged into the free cavity, and that the left maxilla was not implicated; on both sides the mass was so immovable, and the teeth so deeply imbedded in it, that exploration was almost impossible. The patient was fed through a tube, about the size of a No. 18 catheter, passed into the cavity of the left cheek and around the tuberosity of the maxilla.

There was remarkably little emaciation or cachexia, considering the history of the growth, and the great distress of the patient at the mechanical interference with respiration and alimentation, at the extremely fœtid odour, and the constant dribbling, both into the fauces and externally, which deprived him of sleep; he had not had any pain since the protrusion of the masses through the walls of the antrum in the early weeks of the disease; submaxillary glands were not affected, vision was not impaired, and his vegetative functions were well performed.

A consultation decided upon immediate operation; accordingly, on the 21st of January, in the presence of Medical Inspector Bloodgood, and other members of my corps, and assisted by Surgeons Jones and Ayres and Passed Assistant Surgeons Anderson, DuBose, Drake, and Wilson, I removed, en masse, the tumour, together with the entire superior maxilla, and a portion of the malar bone—the patient, in the semi-recumbent position, being chloroformed by Dr. DuBose; the chloroform was immediately preceded by the administration of one ounce of whiskey and a half-grain of sulphate of morphia.

The incisions were as follows: Trans-facial below edge of orbit from body of malar bone to inner angle of eye, joined by a perpendicular cut following the line of the nose, and stopping just short of the gingivo-labial fold; the latter not being divided until later in the operation in order to avoid hemorrhage into the mouth; the nose and inner flap were then separated from their attachments to the bone, and the periosteum from the orbital plate sufficiently to clear the edge of the orbit and the nasal process: an attempt was now made to dissect the integuments of the cheek from the tumour, but was so seriously embarrassed by the tension of the tissues that the gingivo-labial fold was at once cut through, when the large flap was rapidly liberated from its attachments back to the tuberosity, laying bare the body of the tumour.

The periosteum was now raised from the body of the malar bone, and the encroachments of the tumour preventing a more internal section, it was cut through, and into the orbit as far as the spheno-maxillary fissure by means of a Hey's saw and bone pliers,—from here to the angle of the eye the orbital plate was broken through by a short, broad blade, and the nasal process divided with bone pliers,—extracting two incisors, the hard palate and alveolus were cut through, close to the septum, by bone pliers, and the operation completed by seizing the tumour with the lion-jawed forceps and wrenching the entire mass from its posterior connections.

The hemorrhage during the operation was comparatively trifling—no artery required ligation, and a few arterial branches were twisted. At the suggestion of Medical Inspector Bloodgood, the flaps and cavity were freely sponged with hot water with the effect to immediately stop all oozing. The patient's pulse continued good during the operation, he swallowed very little blood, did not choke, but seeming to fail just at the completion, an enema of brandy and beef essence was administered, and forty minims of whiskey hypodermically. Although the tumour was removed in twenty-eight minutes the cavity was allowed to remain open more than an hour, when, all oozing having ceased and the tissues being glazed over, the flaps were brought into position, and retained by interrupted silk sutures, harelip pins, and adhesive straps. The cavity was not stuffed with pledgets of lint. The patient reacted rapidly, and before he was removed from the table was able to hold a slate and write half a dozen sentences in a firm hand. His convalescence has been rapid, five-sixths of the incision healing by first intention : vision is not impaired ; there is no great deformity, and articulation, though muffled, is quite distinct.

Macroscopic Appearances.—There remained but the framework of the maxilla, the thinner portions having been so completely destroyed and replaced by the growth that the point of origin could not be determined. Where the tumour had been under pressure it was extremely firm, non-vascular, and cut crisply; where it had protruded into the free cavities, it was lobed, foliated, and cauliflower-like in appearance, and was relatively more vascular and less dense in structure; no point of ulceration except upon surface of external mass, where it had been abraded mechanically; section of the foliated masses, in the line of axis, presented, in gross appearance, the aspect of a section of the brain, the body of the convolution being nearly white, and the edge gray or mahogany coloured.

Microscopic Appearances.—Surgeons Jones and Ayres have cut, on the freezing microtome, stained and mounted, scores of sections from various portions of the tumour, and found it to be composed of every form of developmental protoplasmic body imbedded in a scanty mucoid, sometimes delicately fibrous stroma, and, at rare intervals, containing calcareous concretions.

Dr. Beyer, Assistant Surgeon U. S. Navy, kindly consented to make a critical examination and drawings of some of these sections, and his remarks are appended :—

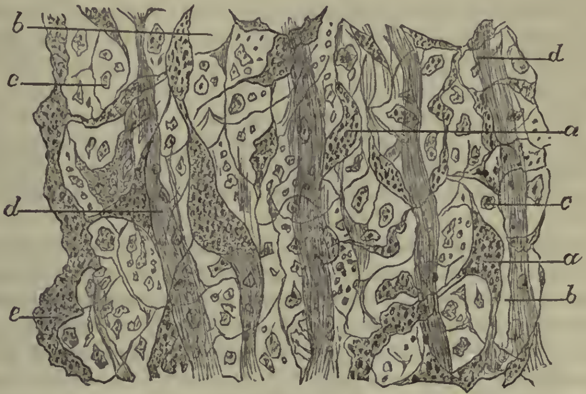
"The tumour is built up of numerous protoplasmic bodies, which being roundish or spindle shaped, and sending offshoots in all directions, freely inosculate with each other, and produce a protoplasmic reticulum, such as is seen in developing embryonal subcutaneous tissue. The points of intersection of this reticulum are the above-mentioned elements—very often compact masses of living matter of the size of nuclei, either homogeneous, shining, or granular. In numerous places the offshoots of the elements are not protoplasmic, but slightly fibrous, indicating a more advanced stage of development of the myxomatous tissue. The meshes of the reticulum are filled with a pale, jelly-like, apparently homogeneous basis substance, refracting light very little, and filled with small, irregular protoplasmic bodies, apparently isolated, to wit, in no connection with the protoplasmic reticulum. The myxomatous tissue is traversed by a number of parallel, rather broad, bundles of fibrous connective tissue, which, perhaps, is the original fibrous tissue of the mucous membrane involved.

"The protoplasmic reticulum, with the myxomatous basis substance, fills the interstices below the bundles, and is spun around the bundles themselves. In many instances the bundles have lost their fibrous structure, and are rather protoplasmic in nature; indeed, it occurs that one and the same bundle is partly fibrous and partly protoplasmic. By the latter change either broad protoplasmic strings are produced, being in connection with the surrounding protoplasmic reticulum ; or the bundle is split up into a number of small spindles, closely packed together, exhibiting the features of a so-called spindle-celled sarcoma. In numerous places the basis substance incloses bright granules of fat—so do also the protoplasmic bodies of the reticulum, indicating a rather localized fatty degeneration.

"The tumour is supplied with but few bloodvessels, mainly large capillaries, and also a few veins; in the latter the adventitial coat is exclusively built up by protoplasmic bodies more closely arranged than in the surrounding tissue.

"The diagnosis, according to Virchow's terminology, is *myxo-sarcoma*, with transitions into net-celled sarcoma, and spindle-celled sarcoma."

Fig. 2.



Section magnified 500 diameters. *a, a.* Protoplasmic reticulum. *b, b.* Light myxomatous basis substance. *c, c.* Isolated protoplasmic bodies in the basis substance. *d, d.* Bundles of fibrous connective tissue. *e.* Broad protoplasmic string arisen from a former connective-tissue bundle.

Remarks.—This case is thought worthy of record as a contribution to the statistics of a grave operation. It is also of interest to the histologist as a somewhat rare pathological condition.

Attention may be profitably directed to some points in the detail. It will be noticed that the cavity, left by the removal of the tumour, was not stuffed as is almost universally directed. I can see no advantage in this procedure which cannot be obtained by carefully adjusted hare-lip pins and adhesive strips, and it has the decided disadvantage of adding a direct irritant.

This case adds one more to the rapidly accumulating facts relative to the usefulness of hot water in surgery—and by *hot* water is not meant a temperature of 70°–90°, but so hot the hand can scarcely be borne in it; the application thus made is simply magical in stopping oozing, and any one who has seen the beautiful cleanliness of a large flap, and has noted the delicate pink lymph covering the same, subsequent to a *hot* cleansing, would never desire to return to cold water.

The extreme rapidity of the growth of the tumour is remarkable; that it was unaccompanied by any severe pain, or by infiltration of the neighbouring lymphatics, or by deep cachexia, and that there exists no evidence of heredity, are other interesting clinical facts which mark it off clearly from the epithelial infiltrating class, and stamp it unmistakably as a sarcoma, a connective-tissue product.

But in noting these facts we are painfully reminded of the history of such tumours, a history which makes them scarcely less malignant than the carcinoma; we can scarcely hesitate to mentally fill out the roll of clinical sequences, and say that there will be a speedy recurrence of this tumour, and remoter secondary growths upon the internal viscera.

ARTICLE XVII.

EXTRA-UTERINE PREGNANCY; OPERATION; RECOVERY. By GEORGE P. YOUNG, M.D., of Allensville, Todd County, Kentucky.

PATIENT, wife of Chas. Small, coloured, aged twenty-five years; mother of two children, one living and five years old. Never suffered more than is usual at child-birth; has been remarkably healthy up to twelve months ago, when she began complaining of unusual pelvic and abdominal pains and uneasiness. This condition continuing and growing worse, caused her to seek the advice of a physician, who, concluding there was ulceration of the uterus, ordered the use of injections, together with a tonic. Notwithstanding the treatment she continued to grow worse, till, in May, 1879, pyrosis and sick stomach set up, which induced her to believe she was "breeding," and that there was no necessity for continuing the medicine. These symptoms soon disappeared, but the pelvic and abdominal pains continued, being intermittent, growing worse with every month; the abdomen gradually enlarging, till the middle of November, when late in the evening her pains grew so severe that she concluded she was in labour, and sent for Dr. B. M. Trabue, of this place. He remained with her during the night, and states that her pains were very severe, although he could not discover any dilatation of the os. By morning her pains had ceased altogether, and she fell into a state of collapse, and remained so for several hours, and at times was almost pulseless. About evening of the second day the patient rallied, and the Doctor continued his visits, and his patient gradually improved in strength, without a further pain or ill omen, till about the 25th December, when she began complaining of a puffing at the navel. This proved to be an ulceration, which broke about the 1st of January, 1880, discharging a quantity of purulent matter. Dr. Trabue not being satisfied with the condition of his patient, related her symptoms to me, and asked me to visit the case with him, which I did on the 4th inst., and obtained the foregoing history.

I found her with a strong and regular pulse; abdomen irregularly enlarged, with an ulcerated opening in the umbilicus, and the enlargement principally on the right side. After palpating the abdomen, I introduced a probe through the opening, extending it to the right at least five inches. It seemed to pass just under the peritoneum, and to be pressing upon a smooth, yet firm substance. I then made a digital examination per vaginam; found the broad ligament just in front, and the os uteri pushed far back into the hollow of the sacrum. I was satisfied that the case was one of extra-uterine pregnancy, and advised a sponge-tent to be placed in the ulceration, with the view of dilating it. On the 7th I found her doing well; removed the sponge, and found thereon considerable hair, and a white substance resembling brain matter. I then advised her to undergo an operation, believing it the only means of relief, to which she consented; and I returned on the 9th to perform the operation. Drs. Preston Peter, of this place, and Geo. Hutchings, of Olmstead, Ky., met Dr. Trabue and myself. Each examined the patient, confirmed the diagnosis, and approved the operation.

Operation.—The patient was placed on a lounge, with a smooth bandage, eight inches wide, extending around her body, and over this another of same width, having four tails, and as many holes, made in the opposite end, the object being to draw the abdominal walls together, and hold them so. All being ready, my patient was soon anæsthetized with chloroform. I thereupon immediately made an incision, from half an inch above to three and a half inches below the umbilicus, cutting into the serous tissue; then, with the aid of a grooved director and probe-pointed bistoury, completed the incision, bringing into view a well-developed child. Its position was such that its back corresponded with the abdominal parietes of the mother. Its head was somewhat inclined, and rested immediately under the diaphragm. Now, to extricate it, I introduced my fingers to break up all adhesions, and make way for the obstetrical forceps, which were soon locked over the parietal bones, and with gentle traction the child was withdrawn. I followed up the cord, and found the attachments of the placenta and membranes. The placenta was attached to the right ovary, and membranes to the anterior walls of abdomen and the diaphragm. Every particle foreign to the mother was removed, so far as I could detect; the pus, and what little blood escaped into the abdomen, was carefully sponged out. This completed the operation, and I had to ligate but one small artery.

The dressing consisted in bringing the incision together with three silk sutures, and placing a wet pad of lint thereon, which was securely held in place by firmly drawing and fastening the bandages that had been previously placed around the patient. By sprinkling a little cold water in the face of patient she rallied promptly, with a good pulse; expressed herself as feeling remarkably well, and was quite astonished when informed that the operation had been completed, as she knew nothing of it.

Patient rested well through the following night, and awoke the next morning with a good appetite. On the 10th and 11th continued to rest well, with good appetite; bowels moved freely, and has been in high spirits ever since. There has been some discharge from the incision, but very little at present.

Feb. 20.—The patient is now up and perfectly well.

It is very remarkable how rapidly she has improved, and I believe my success in this case is due, in a great measure, to the following considerations: 1st. I broke up the adhesions with my fingers, instead of cutting. 2d. I kept the parts well sponged; holding the abdominal membranes close together, thereby preventing the entrance of much air or liquid; and after the operation, of sponging internally till every part was well cleansed.

ARTICLE XVIII.

A CASE OF EPILEPTIFORM CONVULSION CURED BY A SIMPLE DETACHMENT OF A GLANDULO-PREPUTIAL ADHESION. By D. B. SIMMONS, M.D., Surgeon to Ken Hospital, Yokohama, Japan.

H——, a delicate boy of 12 years, entered the hospital December 10th with the following history: About a year ago his mother first observed that his sleep was occasionally disturbed by slight convulsive movements. These continued to increase in severity till two or three months later they assumed the form of decided epileptiform seizures. At the date of coming under my observation there occurred once at least every night, and sometimes twice, epileptiform convulsions. Their duration varied from ten to fifteen minutes, and they were followed by a state of unconsciousness of an hour or more. On further inquiry I discovered that these attacks occurred *only at night*, which led me to examine into the condition of the genital organs. I found the prepuce long, but no phimosis. On attempting to expose the glans, however, an adhesion of the two mucous surfaces was disclosed, just in front of the corona. By firm pressure upon the glans while drawing back the prepuce, its detachment was easily accomplished, as is usually the case when this condition exists. That night the grandmother, who remained awake, *thought* only that she discovered two or three starts such as had ushered in the regular seizures. In a word, the cure was complete, no return of even these slight symptoms of the disease having occurred during the following ten days in which the patient remained under observation.

This adhesion or gluing of the preputial and glandular mucous membranes I have found to exist in nearly every case of nocturnal incontinence of urine in boys—and that its removal always resulted in a complete cure. In one case there was a discharge of feces with the urine, which was also cured by this little operation.

ARTICLE XIX.

TEN CONSECUTIVE BREECH PESENTATIONS IN THE SAME WOMAN. By RANDOLPH WINSLOW, A.M., M.D., Assistant Demonstrator of Anatomy in the University of Maryland.

THE usual ratio of breech to other presentations is 1 to 35, or, according to some authors, 1 to 45. The rationale of this presentation has never been satisfactorily explained, and probably is dependent upon different causes in different cases. Previous to the seventh month of pregnancy, the fœtus floats freely in the amniotic fluid, and its position in utero is influenced by the various shocks to which the mother is subject, as well as by her changes of posture. If an impulse of sufficient strength to rotate the child upon its long axis should occur late in pregnancy, and cause the breech to occupy the inferior segment of the uterus, unless another shock of equal or greater force should be experienced, the probabilities are that the breech would present during labour. Falls, blows, missteps, and sudden changes of posture, are, therefore, the most probable causes of this presentation. In some cases, doubtless, deformity of the pelvis determines this position of the child during labour; the head not being able to engage in the superior strait, is forced up by uterine contraction, thus causing the breech to present.. To this last cause must be attributed the anomalous labours of the woman whose history I now record.

L. B., coloured, thirty-one years of age; married eleven years in September, 1879. She has had ten children, all at or near term. In every labour the breech and inferior extremities presented, and delivery was accomplished in that position. All the children were dead when born, except the fourth, who is alive, and is now nearly seven years of age. This girl was much smaller than any of the others, but nearly perished, either from pressure upon the cord, or from the traction upon the neck, made by the midwife in attendance. In all the labours except the third and tenth, she was attended by a midwife alone. The third labour was very severe, and a physician was summoned, who administered chloroform, and delivered a large female child with forceps.

The tenth labour began at 12 P. M. on December 1, 1879. A midwife was obtained about 9 A. M. on the 2d, who, finding the feet protruding from the vagina, became alarmed, and sent for my father, Dr. Caleb Winslow, to whose assistance I was soon summoned. We found the legs and body of the child had been delivered for some time, the cord compressed, and life extinct. The head was arrested at the superior strait, and the arms, extended upon the head, were within the uterine cavity. After drawing the arms down, and delivering the shoulders, prolonged and strenuous efforts were made to deliver the head by traction upon the trunk, but without success, the head not being able to pass through the superior strait on account of the great shortening of the antero-posterior diameter, caused by undue projection of the promontory of the sacrum. The occiput was lodged upon this projection, and the chin hooked over the pubis. An attempt was made to alter the position of the head, but did not succeed, and traction was continued until the muscles and ligaments of the neck were felt to be giving way. Hodge's long forceps were then applied, and the head forcibly compressed, when, after using much force, delivery was effected. The blades of the forceps were found to be applied to the sides of the head, with the ears in the fenestra, in almost the same manner as in ordinary presentations of the vertex. The forceps not only reduced the size of the head by compression, but permitted more direct force to be applied in extraction.

The child was a well-developed but not unusually large girl; upon the back of the head was a deep furrow, caused by dragging it over the sacral projection. The placenta was extracted with difficulty, owing to an hourglass contraction of the uterus, and considerable hemorrhage followed its removal. The woman recovered promptly, with scarcely a bad symptom, and was attending to her duties in less than two weeks. She has always enjoyed good health, and declares she has never had a physician attend her for any other ailment. The deformity in this case was limited to the superior strait. The pelvic excavation and the inferior outlet were capacious, which materially aided in the delivery by the forceps.

The labours of this woman afford striking examples of the conservatism of nature, in thus performing naturally what, under other circumstances, becomes a difficult and dangerous operation—version, which sometimes succeeds in cases in which the superior strait is narrowed, even after the forceps have been applied in vain. This woman was thus delivered naturally eight out of ten times. Nine children lost out of ten is a terrible sacrifice of life, and I doubt not the result would have been different if premature labour had been induced at the beginning of the seventh month of pregnancy; and the danger to the mother would have been lessened at the same time. The proportion saved might have been greater had the woman been attended by an intelligent physician, instead of by ignorant midwives, who allowed the opportunity for successful interference to pass by without seeking medical assistance.

Article XX.

Impacted Calculus in Child Seven Months Old; Phimosis and Adherent Prepuce. By G. F. Blawelt, M.D., of Nyack, New York.

On Jan. 11th, Dr. C. H. Masten asked me to see with him a child seven months old, which had suffered from retention of urine for about twenty-four hours. All attempts at introducing a catheter had failed, on account of an obstruction in the membranous urethra. The child had phimosis, and the prepuce being somewhat swollen, the glans could not be brought to view. The prepuce was slit up to a moderate extent, and then, as the glans was exposed, it was seen that the mucous membrane of the prepuce was adherent to the glans on one side. Attempts were now made to introduce a small flexible catheter, and an obstruction was met, at about the junction of the penis and scrotum. After a little manipulation, the catheter passed on to the perineum, beyond which point it would not go. The finger introduced into the rectum, to aid the entrance of the catheter, caused the child to strain violently, and a considerable quantity of urine was forced out alongside the catheter. There was a feeling as though the catheter was in contact with a gritty substance. A catheter of English make, about No. 8 French scale, was tried, and encountered a complete obstruction at the junction of the penis and scrotum. A probe was then used and a calculus distinctly felt. The stone was brought to within a couple of lines of the meatus by manipulation with the finger on the outside of the urethra. A probe, made into a short blunt hook, was then slipped behind the stone in this position, and it was forced through the meatus. The meatus had to be slightly enlarged by incision. Catheter No. 10 French scale was now passed into the bladder without difficulty. The stone was composed of urates and uric acid, and measured 13 millimetres in circumference. The child had no further trouble.

This case is of great interest, on account of the very early age at which the stone was passed; also from the combination of three of the chief causes of retention of urine in infants; viz., impacted calculus, phimosis, and adherent prepuce.

REVIEWS.

Art. XXI.—*Clinical Study of Yellow Fever.*

1. *De la Fièvre Jaune à la Martinique, Antilles Françaises. Étude faite dans les Hôpitaux Militaires de la Colonie.* Par L. J. B. Bérenger Féraud, Médecin en Chef de la Marine, Membre Correspondent de l'Académie de Médecine, Laureat de l'Institut de France (Académie des Sciences), etc. Paris: V. Adrien Delahaye et Cie., 1879.
2. *Reports to the St. Louis Medical Society on Yellow Fever.* By W. Hutson Ford, A.M., M.D., formerly Professor of Physiology in the New Orleans School of Medicine, and in the Charity Hospital Medical College of New Orleans. St. Louis: Geo. O. Rumbold & Co., 1879.
3. *Proceedings of the Louisiana State Medical Association, held in New Orleans April*, 1879. *Comparative Pathology of Malarial and Yellow Fevers.* By Joseph Jones, M.D., Professor of Chemistry and Clinical Medicine, Medical Department University of Louisiana; Visiting Physician of Charity Hospital, New Orleans.
4. *Third Report of the Board of Health to the Honourable City Council of Nashville for the two years ending December* 31, 1878.
5. *Twelfth Annual Report of the Health Department to the Honourable Common Council of Cincinnati for the year ending December* 31, 1878.
6. *A History of the Yellow Fever Epidemic of* 1878 *in Memphis, Tenn.* By J. M. Keating.
7. *Annual Report of the Board of Health of the State of Louisiana to the General Assembly for the year* 1878.
8. *First Annual Report of the State Board of Health of Kentucky*, 1879.
9. *Yellow Fever and Malarial Diseases, embracing a History of the Epidemics of Yellow Fever in Texas; new views on its diagnosis, treatment, propagation, and control; Description of Dengue, Malarial Fevers, Jaundice, the Spleen and its diseases, and Diarrhœa Hemorrhagica: with practical remarks on their successful treatment, etc.* By Greenville Dowell, M.D., etc., 1876.

One undertakes a troublesome task when he attempts to criticize the late treatises and papers upon yellow fever. It may even occur that a measure of the disagreeable shall be added to the labour. No matter if the intentions of the critic are directed to the one end of selecting that which he considers practically good and worthy of preservation, he is liable to fall under heavy censure from those who differ in their estimates of the value of articles reviewed.

People who have written much about yellow fever are generally possessed of decided opinions, and their papers are prepared for the purpose of enunciating or defending these opinions. It also sometimes occurs that there is evidenced a most unreasonable degree of sensitiveness on the part of writers, if the doctrines they advance, do not meet with general and implicit acceptance. It is also singularly true, and greatly to be lamented, that yellow fever papers are likely to be dogmatic in spirit and expression in inverse ratio to the opportunities for practical observation and experience enjoyed by their authors. The writers of some of the papers now before me, yet not enumerated in the prefatory list, have had their lots cast in such favoured places that they have never witnessed a case of yellow fever. When they attempt a solution of the more difficult problems connected with this disease by a purely scholastic method, or speculation, they are so inconsiderate as the painter who exclaimed to Echo, "Come forth that I may paint thee!"

There is so much that is eccentric in the behaviour of yellow fever-poison, both without and within the human system, that remarkably strong contrasts are afforded by different epidemics in their liability to spread; while individual cases also show marked differences in their morbid phenomena. These contrasts are seized upon by superficial or ignorant observers, and are invested with the importance and authority of rules. The behaviour of scarlatinal poison is characterized by as much eccentricity, and as decided contrasts, as that of yellow fever. Touching either disease, there are many problems still unsolved, and each should be discussed modestly and moderately, with a view only to the extension of the range of our knowledge.

It is our intention to confine this review to practical points connected with the clinical history and treatment of yellow fever. We shall not employ our very limited time and space in making long extracts from the various works whose titles head this review. Every one of them has a certain degree of merit and value to the careful and fair-minded reader. Féraud has given us an interesting and instructive volume; and Professor Jones has brought his accustomed industry and research to the accomplishment of his report. Keating's book has much valuable history, but is blemished by frequent and unnecessary errors. Dr. Ford's propositions are worthy of careful perusal, but we cannot subscribe to his conclusions.

In the *clinical study* of yellow fever, it is much more practicable to consider the disease as having two stages than to attempt to divide it into three, as most of our treatises do. The cold stage is often so slight as to be inappreciable, and even when so decided as to be readily recognizable, it is practically unimportant to consider it as a distinct feature in the morbid process. The exceptions to this statement are found in those rather uncommon cases which are attended from the beginning with cool surface and extremities, and with symptoms denoting congestion. In some of these cases reaction fails to occur and death ensues. A simple and rational method is to class the initiatory cold spell with the succeeding fever, and designate this as the "first stage," or "paroxysm." This is followed by the "second stage" or "calm."

Symptoms.—The suddenness of the attacks of yellow fever is so much the rule that this is made an important diagnostic mark of the disease. Persons are frequently seized after hearty meals, or during temporary visits from their domiciles, and are liable to incur greater danger to life in consequence of such accidents.

The fever of the paroxysm is not commonly excessively high. The temperature in a majority of cases reaches its highest stadium during the first and second days, and declines upon the third or fourth day. But we have seen it persist with but little variation from the highest records of the first or second day until the sixth day. Occasionally we have known the temperature to reach its highest reading during the first twelve hours of the attack, and then to decline rapidly and completely. It should be remarked that moderately high fever occurring early in the paroxysm is by no means an undesirable event. In 1878 we saw an English woman in one hour and fifty minutes after her first seizure, whose temperature in the mouth was 106.2°. She made an unusually favourable recovery. All physicians, experienced in observations of yellow fever, prefer to find their patients with a febrile movement frank and decided in character.

The neuralgias of the paroxysm are such constantly observed symptoms as to afford valuable aid to diagnosis. Frontal headache, and lumbar rachialgia are generally severe, but the muscles of the extremities are quite frequently affected with pain and soreness upon movement.

Yellow fever poison produces an effect upon the organic system of nerves important to be observed both for purposes of diagnosis and prognosis. We refer to the paralysis of vaso-motor branches, and the consequent tardy movement of the blood through capillary vessels. This condition occurs so early in the course of the disease that the phenomenon may be safely reckoned as a primary effect of the poison. While this "blood stasis" (as yellow fever practitioners generally term it), and the attendant flushing of the face and skin, are seldom absent from cases of yellow fever, they differ greatly in degree in individual attacks. In mild cases, or those of only moderate severity, the flushed surface will be of a lively hue, and the white markings produced by pressure will be quickly effaced. In very severe cases the skin is livid, or darker in colour, and turgid from congestion, while the marks of pressure disappear slowly. This explains the circumstance that so many adjectives, of quite contrary significations, have been used to describe the appearances of the countenance in yellow fever. The degree and character of suffusion of the surface in the early stages of yellow fever, bear a direct relation to the occurrence of albumen in the urine, and also to the subsequent yellowness of the skin. The albumen will appear earlier or later, or not at all, in direct relation to the degree of blood stasis present in the first twenty-four hours of the attack.

The second or "calm stage," is the period of greatest interest and anxiety to the experienced physician. He may well understand the truth of the doctrine that yellow fever poison works out its fullest limits of mischief during the paroxysm, but he knows that the measure of evil to the patient may still be unfilled.

The primary operation of the poison may have ceased, but it must be held as true of this toxic agent, as of most others, that its first effects in deranging the chemistry of the system, are liable to be attended by the production of secondary blood inquinations, often of such a nature, and in such amounts as to occasion death.

However experienced the physician may be, he has no rule or standard by which he can safely measure the blood lesions which have occurred either during the paroxysm, or after its subsidence. Without attempting to solve either problem, long observation has taught us to think that the safety of the patient rests very largely upon an equable preservation of physiological functions until restitution of the blood could be accomplished. We do not attempt to formulate this idea so as to classify functions in an order which should exhibit their relative importance. While it is essential that depuration of the system should be insured, recovery is almost hopeless without a competent integrity of the digestive apparatus.

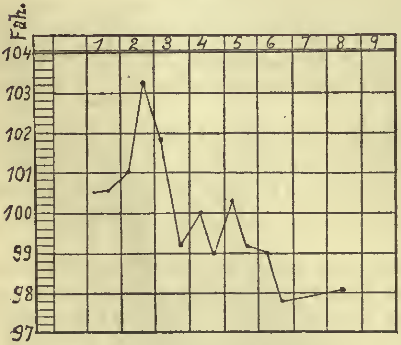
When the stage of calm is ushered in, the physician is brought to a full realization of the difficulties attending the explanation, or even an understanding, of the morbid processes of yellow fever. The fever subsides, and the pulse becomes slow, often even slower than natural. It is often gaseous or unrhythmical, and always easily obliterated by pressure. All subjective symptoms of pain pass away, and in a large number of instances the patients believe themselves to have recovered, and would attempt to get up from their beds if permitted. In many cases the efforts to do so convince the patients that they had judged incorrectly of their physical strength, although this knowledge may too often be purchased at the expense of their lives. The stage of calm is without doubt the period of restitution, or recovery from an attack of yellow fever. In mild cases the patients enter upon convalescence as soon as the paroxysm has terminated. But however mild the attack has been, the convalescence is always slow and difficult from the fact that it is easily interrupted. Slight derangements or revulsions of the system, even mental emotions—causes too trivial to exert any influence upon the convalescence of most other acute diseases—prove fatal to those recovering from yellow fever.

Even in most severe and fatal forms of yellow fever, where life is not extinguished by the primary influence of the poison upon vital centres, we have often witnessed, at the beginning of the "calm stage," manifest efforts of the economy in the direction of recovery. The patient is lightened of the burden of his pain and fever, and appears freer from disease; but failure to recover is painfully frequent, and seems to be due to the fact that the blood has suffered deperdition, or inquination, beyond its capability to afford nutrition and support to essentially vital functions.

The march of temperature in the second stage of yellow fever is important to be noted. Slight secondary fever existing for a few hours, or it may be for one or two days, may be safely borne by the patient; but a sudden or excessive rise of temperature in the second stage is always of the most serious import.

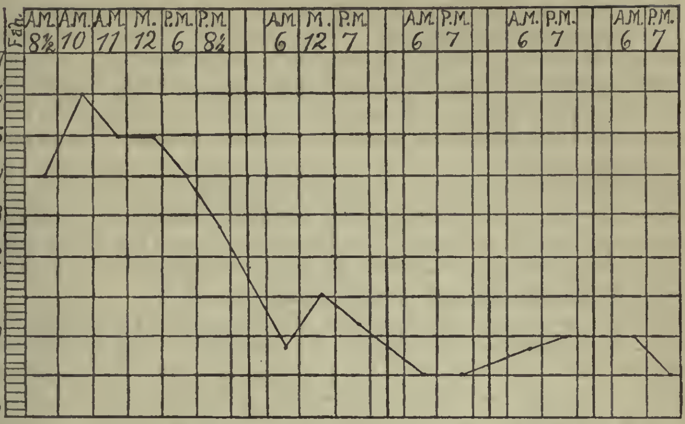
It is also safe to assert that the danger line of high temperature in yellow fever, descends progressively from the onset of the disease to confirmed convalescence. The medical profession is under much obligation to Dr. J. C. Faget and Prof. Joseph Jones, of New Orleans, for many carefully noted observations which show divergence of pulse and temperature lines in yellow fever. The accompanying charts of temperature are selected from many hundreds in our hands, for the purpose of illustrating their diagnostic and prognostic value.

Fig. 1.



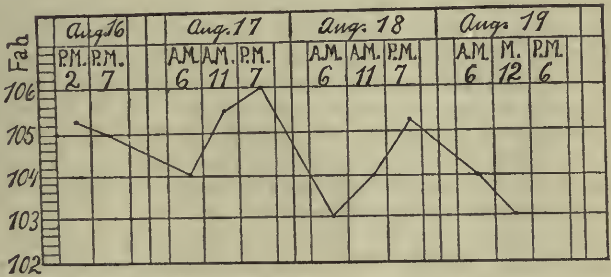
Vicksburg Hospital, 1878. Cured.

Fig. 2.



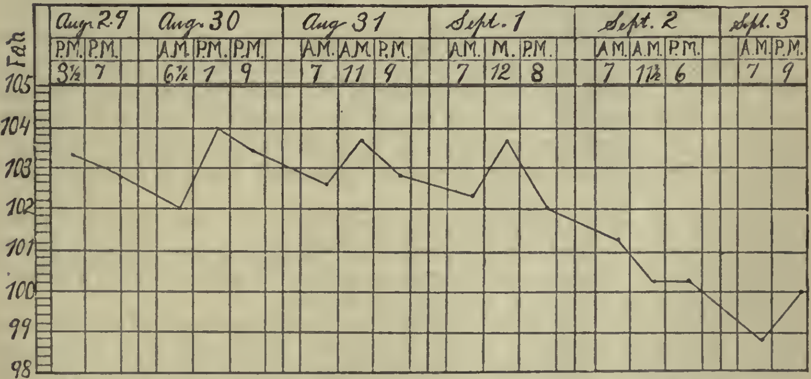
Temperature Chart of Wm. M.—Age 43 years; admitted to Touro Infirmary August 14, 1878; discharged cured September 1, 1878.

Fig. 3.



Temperature Chart of Edward H.—Age 29 years; admitted to Touro Infirmary August 16, 1878; died August 21, at 2 P. M.

Fig. 4.



Temperature Chart of A. W.—Age 29 years; admitted to Touro Infirmary August 29, 1878; died September 4, at 4 P. M.

Yellow fever is a hemorrhagic disease, and induces this diathesis through the same morbid conditions that act as factors for its production in other maladies or permanent diatheses. These are the blood alterations which favour extravasation; weakening of vascular walls through innutrition, and no doubt increased internal pressure upon the capillaries from their congested state. But we have seldom seen death directly attributable to hemorrhage, unless it occurred from a recently emptied uterus. There may have been an occasional case in which the blood "slops" over from so many surfaces as to cause death, but we have had, much more frequently, reasons for believing that hemorrhage exerted a salutary influence. It is very rare for a female to suffer an attack of yellow fever during the ovulating period of life, without sanguineous discharge from the vagina which very often is attended by amelioration of morbid symptoms.

Féraud is certainly correct in the statement that yellow fever is very seldom complicated by other diseases. It sometimes happens that catarrhal inflammations of the throat or air passages are attendants upon an epidemic, or upon the autumnal part of an epidemic career pneumonia is occasionally met with, in the second stage more especially. In most instances where complications are mentioned in treatises, they consist in morbid conditions existing at the moment of attack. Like the great majority of the pestilential diseases, yellow fever is not held in abeyance by the presence of other forms of sickness. When yellow fever has infected a hospital, it swoops down with remorseless universality upon all unprotected inmates irrespective of the disease by which they are confined. We have sometimes felt persuaded that malarial affections in some manner predispose their subjects to yellow fever attacks. It is, however, so frequently intercurrent in surgical and obstetrical cases that there is some reason for the belief that the poison, like that of scarlet fever, erysipelas, or diphtheria, is in some manner influenced by traumatic states of the system.

As an intercurrent malady yellow fever is a source of endless mortification to the practitioner. The early symptoms are in many cases masked by the pre-existing disease. It is true, as Féraud asserts, that when the formative process of the disease is completed, its morbid phenomena completely absorb and govern the pathology of the case. There is then but little difficulty in asserting a diagnosis, but it too often occurs that all opportunity for successful treatment has passed away before the disease was, or could be recognized.

Relapses.—We have never witnessed a relapse in yellow fever, if the word is restricted to its correct sense of implying a repetition of the whole clinical career of a case from the beginning to the date of the relapse. If the clinical phenomena of so-called relapses are analyzed, they will seldom bear any considerable resemblance to those of the first attack. Interruptions to convalescence are at the same time most common and most unfortunate events.

Second attacks are scarcely more common in yellow fever than in smallpox, or measles. We have never attended the same person in two attacks of the disease, and know of but one altogether reliable observer who has treated the same individual through two attacks.

Treatment.—Yellow fever must be placed in the catalogue of self-limited diseases, and is therefore scarcely susceptible of jugulation or abortion. Violent efforts to secure this end are not only unsuccessful, but are likely to be followed by a prejudicial influence upon the subsequent career of the case. But in view of this statement, we have often been astonished at the amount and character of ill-advised, but heroic medication, patients will bear, provided it be limited to the formation period of the attack. A patient may with impunity bear vomits, cathartics, or even venesections in the early part of the first stage of the disease, but during the second stage an unexpected clap of thunder, or the fall of a shelf of books on the floor of his room may occasion fright, followed by fever, delirium, and fatal results.

The patient should be placed in bed as shortly after his attack as is possible, and a strictly recumbent position enforced until his convalescence is sufficiently advanced to justify the relaxation of this rule. A warm pediluvium may be ordered—the tub being placed upon the bed, and under the cover. A blanket or comforter may be placed over the patient, and a palatable drink given him, but not so freely as to occasion emesis by distension of his stomach. This will seldom fail to induce free diaphoresis, which may be pretty steadily maintained by occasional repetitions of the foot-bath and small draughts of the liquid selected for the patient's drink. This may be orange leaf infusion, lemonade, Seltzer or Apollinaris water. The drinks may be warm or cold as the taste dictates.

Diaphoresis is generally easily induced during the paroxysm of yellow fever, and, when within reasonable limits, is a desirable event. But attempts to cure the disease by forced stimulation of this function should be sternly opposed. Lives are frequently sacrificed in efforts to cure yellow fever by the sweating process. It may be true that the yellow fever poison is in part, or even chiefly, eliminated through the sweat glands, but it is not wise to allow an unproved theory to govern our practice. It cannot be too constantly borne in mind that excessive functioning of any gland system, or organ, is dangerous to yellow fever patients. If such events do not bring danger from the exhaustion they occasion, they do so by destroying that physiological equipoise of functions so important to recovery. There are two opposite conditions of the skin which seem to exert a prejudicial influence in favouring the occurrence of renal congestion and suppression of urinary secretion. One of these conditions obtains in excessive, and persistent diaphoresis, and is probably occasioned by withdrawing the water of the blood and thus increasing the difficulty of its circulation, while the solid constituents separated in the kidneys become themselves local irritants. The other condition is found in those cases of yellow fever which occur during cold weather with the surface at a temperature which completely arrests perspiration. It is probable that in this latter condition the excessive function put upon the renal apparatus occasions the congestion and consequent arrest of secretion.

It is an excellent rule for the physician to acquaint himself with the patient's history shortly previous to his attack, and if the stomach be suspected to contain much food of any character, or a small amount of indigestible material, he should empty it by an emetic. We have more than once been forced to regret an ignorance of such a fact, and the consequent neglect to administer emetics. The bowels should be well freed from fecal accumulations, either by the exhibition of a cathartic, or by laxative enemas. Many physicians attach importance to the choice of the cathartic. Some prefer calomel, others select salines, and some again favour the exhibition of castor oil. The object of cathartics being simply to unload the bowels, castor oil is the most efficient, harmless drug which can be employed for this purpose. The salines have the great objection of being uncertain and irregular in their action. Calomel will be retained in irritable states of the stomach which reject other cathartics, but in our opinion is in no other respect preferable as an initiatory cathartic. Our experience is thus opposed to that of those who hold that cases undergoing purgation by calomel are bettered by some curative effects of the mercurial.

After the bowels are cleansed it is good practice, in this region of country at least, to administer a scruple of quinia in solution by rectal injection in either one or two doses, as may be thought best. The objects of the quinia are to subtract malaria from the pathology of the case, if known or suspected to be present, also to aid in the relief of the neuralgias; and again, to intercept or arrest those alternate flushings of heat and chill, which attend the early hours of many cases. It is a good plan to add from ten to fifteen drops of Battley's Sedative, or its equivalent in some other form of opium, to the quinia injection. This quiets the bowel until the enema is absorbed, and relieves the neuralgic pains which the patient experiences. After this, mild cases require no further medication. The cases should be carefully watched, that is, each patient should be visited not less than three times each day during the first seven days, and longer if circumstances demand it. An obedient and intelligent nurse should be constantly at the bedside, and instructed to give those attentions which, however insignificant in themselves when viewed separately, in their make-up constitute the anchor of safety to the patient. The most important of these duties are as follows:—

1st. The room must be kept clean, well ventilated, quiet, and absolutely free from visitors, other than those the physician admits.

2d. Giving the patient his drinks or food. This must be done by means of tubes or pap boats so as to avoid raising the head.

3d. Sponging or frictioning the surface.

4th. Attentions to the bladder and bowels of the patient, and careful use of the bed-pan in order to avoid physical exertion on his part.

Sick stomach is often a troublesome symptom. It should receive prompt attention and be treated with unwearying patience by both medical adviser and nurse. Applications of mustard, or chloroform, or spices should be resorted to. The native nurses of New Orleans have a method of preparing a spiced wine by boiling a variety of spices in claret, and then applying poultices of bread previously soaked in the spiced wine, over the epigastrium. Broken ice should be allowed the patient to swallow, and effervescing drinks from crushed ice given in small quantities and frequently. These drinks may be Seltzer, or Soda water, Apollinaris water, or Champagne wine, or other forms of effervescing liquors. Brandy, or whiskey in Seltzer, or Apollinaris water, is often taken with relish and benefit. Alcoholic drinks are so generally well borne in yellow fever that I can positively declare I have never seen a patient made worse by their rational use. It is our habit to allow them when grateful to the palate, in all stages or conditions of the disease.

If these measures fail to relieve, very small portions of opium should be tried. An efficient prescription is: Sulphate of morphia, one-half grain; bicarbonate of soda, one scruple; cherry laurel water, and peppermint water, four fluidrachms each. Give a teaspoonful after every act of emesis until it is arrested. Occasionally a better prescription is one drop of creasote with two to three drops of Battley's Sedative, suspended in one fluidrachm of a mixture of equal parts of mucilage of gum Arabic and peppermint water, to be given in some cold effervescing liquid, as iced Seltzer water.

If the vomiting is continued in the second stage of the disease, it is apt to be attended by blood, either poured out in such considerable amount as not to be acted upon by the stomach acids, or, as more often happens, in less amount and in the form of "black vomit." The remedies addressed to the cure of vomiting in the first stage, are equally applicable in the second stage. It is a matter of great importance that the physician shall give his patient assurance that black vomit is not necessarily a fatal symptom. It is indeed true, that black vomit is very unfavourable as a prognostic symptom. But it is also true that it is unfavourable from the fact that it reveals deplorable lesions of the fluids, and not because it is in itself dangerous.

Ergot is much lauded by some practitioners, but our own experience does not incline us to think favourably of it. In our own practice, nutrition and stimulants have proved the best of all hemostatics.

The pyrexia: In a large majority of cases of yellow fever no other antipyretics are required than sponging the surface, light covering, and cold drinks. But it is sometimes necessary to resort to more energetic and direct measures for lowering the temperature. Excessive fever is of itself an element of danger. There is much difference of opinion in the profession as to the proper course to pursue. Cold bathing, either by the plunge or douche, is advocated by some. The principal objection to this mode of treatment consists in the exertion and perturbation inflicted upon the patient by changing his bed and clothing, and also the repeated change of his position. The benefits likely to accrue from the baths do not compensate for the harm they are apt to involve. It is the practice of some physicians to attempt the reduction of fever by large injections of cold water, which are said to prove very efficient antipyretics. Aconite, veratrum, tartrate of antimony, and ipecac. are frequently exhibited. A cautious use of one or the other of the first two on the list may prove beneficial, but their injudicious or careless exhibition may do irreparable harm. We have seen digitalis produce unquestionably good effect in mitigating fever, and have often administered it in doses of thirty to sixty drops of the tincture every third or fourth hour. It is best to give it in solutions of acetate of ammonia or potash.

Quinia is relied upon by many as an antipyretic. In our hands it has failed to exert any obvious influence in reducing the fever; but we must admit we have never given it in heroic doses.

In many attacks of yellow fever the nerve centres are the seat of profound pathological indications. The most fatal cases are those in which coma and cool extremities and surface occur as early events. Under these circumstances the practitioner is warranted in resorting to the heroic use of those remedies which occur to his mind as being likely to bring about reaction. Cups, blisters, purgatives, quinia, and stimulants may be used, but are generally alike fruitless of good result.

In young persons convulsions, delirium, and high temperature with flushed face often attend the early hours of attacks. The prognosis is considerably more favourable in these cases than those of a congestive character. The treatment should consist of cupping or leeches about the neck and head, cold to the head, and a free calomel purge. The convulsions may be held in abeyance by chloral, hypodermic injections of opium, or injections of bromide of potassium into the bowels. The effects of the latter drug and ergot are undoubtedly of service in reducing irritation of the nerve centres. Suppression of urine is nearly always a fatal symptom. Attempts for its cure should be made with saline cathartics, cups over lumbar region, followed by warm stupes and injections of warm fluids into the large bowel.

In the symptomatic treatment of yellow fever by drugs, or perturbing measures of any description, the practitioner should always ask of himself whether, in the event of failure to do good, the remedies are not likely to prove hurtful? Little things are so important in yellow fever, that, unless our path is plainly open to us, it is generally better to say with Armstrong, "Let us wait for the coming of the light, rather than walk amid dangerous precipices in the dark."

Alimentation.—In yellow fever the stomach is nearly always querulous and uncertain as to the functions entrusted to it. On this account food is strictly forbidden to the patient until he is judged to be capable of retaining and digesting it; or, on the other hand, until direful necessity compels the administration of nourishment without regard to other conditions.

In our opinion, questions connected with the nutrition of the patient constitute the most difficult problems of treatment of yellow fever. We see in the patient a person whose blood is brought down to the very minimum of nutrient capability consistent with continuance of vital functions. But his stomach is not in a condition to tolerate or digest food. Our own method has been to postpone the administration of food until the patient gives some evidence of an improved state of his stomach, unless a flagging pulse or other indications of weakness, or hemorrhages, call imperiously for its use. Upon the third or fourth day with adults, and as early as the second or third day with children, sweet milk and barley water may be mixed together in equal quantities, and a tablespoonful administered. If it is retained and seems grateful to the patient or appears to benefit him, the same quantity may be repeated every third or fourth hour. After from twelve to twenty-four hours' trial of this aliment, chicken water or beef essence may be substituted, and the dose cautiously increased. We wish to impress upon those professional readers who have seen but little of the disease, the important lesson that our way must be, as it were, felt along and explored before us in the administration of food as well as of drugs. If the stomach is unable to retain or digest the aliment when it becomes necessary to force its exhibition, the rectum may be utilized for this purpose. Valentine's meat extract is the best of all beef essences which we have used. A tablespoonful may be mixed with four or five times that quantity of tepid water and thrown slowly into the rectum. This may be repeated every fourth hour. A tablespoonful of coffee, whiskey, or brandy may be added.

There is no rule by which we can determine when a patient is fully recovered from an attack of yellow fever. He should be enjoined to be careful in regard to his food, and cautioned against much physical exertion for at least a month after release from the physician's observation.

To conclude, the following propositions seem to be justified by the present state of science:—

1st. Yellow fever is the sum of changes and effects produced in the human economy from the presence of a specific poison.

2d. The specific nature of the poison is shown by (*a*) the inconvertibility of yellow fever with any other disease; by (*b*) the certain recognition of the disease through clinical histories found in its earliest records and down to the present time; by (*c*) the fact that it is portable from one place to another, and produces identically the same disease in places to which it has been carried.

3d. The opinion that the poison is in its essential nature an organism finds support in the following facts: (*a*) it reproduces its kind in successive crops; (*b*) certain climatic conditions, as a suitable warmth and moisture, favour its development, while this is arrested by extreme heat or extreme cold.

4th. It is reproduced chiefly, if not wholly, within the body, but undergoes some change after its escape from the body which increases its toxic qualities. It possesses ponderability and some certain unknown quality which causes it to adhere to solid surfaces. On account of these characteristics of the "germ," the disease is seldom communicated from the persons of the sick, but it is generally contracted by visiting infected localities or by contact with infected things.

5th. While yellow-fever poison is an air-infecting agent, this quality is confined to limited areas. It is, therefore, wholly dependent upon human travel and commerce for propagation to any considerable distance from an infected place.

6th. The atmosphere appears to be the medium of its introduction to the system, as no instance is on record showing it to have been received with food or drink.

7th. Clinically considered, yellow fever is a self-limited disease of one paroxysm, and the blood deperdition due to the primary action of the poison is accomplished during this paroxysm.

8th. As the disease cannot be intercepted, or jugulated, or cured by antidotal or eliminative treatment, its therapeusis is limited to those medicines which are useful in controlling symptoms.

9th. The only safe prophylaxis is to keep unprotected persons out of the range of infection, either of localities or things, (*a*) by a rational system of quarantine, (*b*) by a careful isolation of the sick, (*c*) by cleansing and disinfecting all localities and fomites. S. M. B.

ART. XXII.—*Recent Progress in Nervous Diseases.*

A Manual of the Nervous Diseases of Man. By MORITZ HEINRICH ROMBERG, M.D., Professor of Medicine at the University of Berlin, etc. Translated and edited by Edward H. SIEVEKING, M.D., F.R.C.P. 2 vols. 8vo. pp. xvi., 316, xviii., 450. London: Printed for the Sydenham Society, 1853.

Klinik der Nervenkrankheiten, etc., Von M. ROSENTHAL. 8vo. pp. 800. Stuttgart, 1875.

A Clinical Treatise on the Diseases of the Nervous System. By M. ROSENTHAL, Professor of Diseases of the Nervous System at Vienna. *With a Preface*, by M. CHARCOT. Translated by L. PUTZEL, M.D. 2 vols. 8vo. pp. xi., 278, vi., 284. New York: Wm. Wood & Co., 1879.

THE works of Romberg and Rosenthal represent two epochs, thirty years apart. It may be interesting to review the intervening period, to note the progress made, to observe how much that has been proposed during that period has been actually incorporated into science, and to learn the benefactors to whom we are indebted for genuine contributions to knowledge. Of course it is not possible within the limits of a journal article to include every topic, but we may pass in review some of the most important, which have prepared the way for the greatest advances.

Sir Charles Bell said in 1830, "I fear it will be a long time before combined efforts will enable a medical author to arrange and accurately describe the Diseases of the Nervous System." Romberg, in 1840, made the first real attempt to construct a scientific treatise, and as he based it on the "physiological principle" it has stood the test of time. But his efforts were not duly supported and appreciated in his own day, for we find him saying with some bitterness, in the preface to the second edition of his great work, "the study of nervous diseases has been declared a fruitless research, and in some schools has been almost interdicted." Nevertheless, Romberg lived to see a considerable development of neurological medicine, and had the rare satisfaction to observe the growth of a literature, of which his own work had been the inspiration. The *renaissance* which he thus effected proceeded to a rapid growth. The lamentations of twenty-five years ago over the barrenness of the literature of nervous diseases, have now been replaced by apprehensions of a superabounding fertility. We are menaced by a progeny, very lively, indeed, and voluble, but wanting in stamina—fertile but weakly. The activity displayed in the publication of treatises and journals of nervous diseases, is equally exhibited in the production of specialists. At present, the practice in nervous diseases is a favourite field of professional activity in all civilized countries. We are told that "the wear and tear of modern life" is increasing disorders of the nervous system, and hence, every man amongst us who is seized with a headache for the first time, or with stomachal vertigo, or fails to remember a name, becomes alarmed and makes haste to consult a nerve doctor. Woe betide him! if now the fundus of his eye is examined with the ophthalmoscope, his sensibility tested by the æsthesiometer, his motor functions tried by the dynamometer, his temperature ascertained by surface thermometers and the thermo-electric pile, and memory, reason, and judgment subjected to a rigid cross-examination. He is ever afterward pursued by phantoms. He goes from city to city, and crosses the ocean in pursuit of opinions from the most celebrated specialists, and although conflicting views unsettle his faith in the infallibility of medical experts, he acquires an immovable conviction that he is the victim of a serious brain disease.

Are there any facts to support the current belief that diseases of the nervous system occur more frequently than formerly? The practice of a specialty increases to the practitioner the relative proportion of cases in his own field. At first, the sieve which separates nervous from other diseases has meshes so narrow that no case capable of furnishing a fee can possibly get through. An increasing reputation in his chosen department enlarges the number of clients in that specialty, until ultimately he sees none other. Hence to him, if he be a nerve doctor, a great increase of nervous diseases has taken place in his own time. Althaus[1] made, not long since, a most timely contribution to the subject of the relative prevalence of nervous affections. By a most exhaustive study of the Annual Reports of the Registrar-General of England, Althaus has established from the data there given, the following proposition :—

> "The rate at which diseases of the nervous system prove fatal to the population of this country is a steady one, and subject to a definite law, to which there are not any, or only apparent exceptions. This rule does not appear to vary

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[1] Diseases of the Nervous System: their Prevalence and Pathology. London, 1878.

perceptibly from time to time, and amounts to about twelve per cent. of the entire mortality from all causes."

The conclusion to which he arrived was that no increase in nervous diseases had taken place during the last decennia. If the supposed increase had really occurred in modern times, we should expect to find the evidence of it in England, the best representative of the highest development of modern civilization. The fact is, it is the increased attention given to the study of nervous diseases, which has led to a more exact differentiation, and the more frequent diagnosis of these affections.

The work of Romberg was inspired by the then recent discoveries of Magendie and Sir Charles Bell. Romberg was an ardent disciple of Sir Charles, and he does not seem equally familiar with the wonderful researches of Magendie. Contemporaries, as they are apt to be, were greatly mistaken in their judgments in respect to the merits of these physiologists. Bell received abundant honours in his lifetime and from immediate posterity; Magendie was maligned and his discoveries discredited. A more remote posterity seems disposed to correct the errors, and rectify the false judgment of those who placed Sir Charles Bell in a position of honour to which he was not entitled, and condemned Magendie without reason. Much credit is due Dr. Austin Flint, Jr., for his historical researches on the subject of Bell's supposed discovery of the functions of the spinal nerves. Flint proves that Sir Charles interpolated the facts in a subsequent edition of his pamphlet, announcing the discovery, after Magendie had demonstrated the separate functions of the anterior and posterior roots of the spinal nerves. In a memoir on the nerves of the head read before the Royal Society in 1821, Bell makes no allusion to motor and sensitive roots of the spinal nerves, a discovery announced by Magendie in 1822. In a subsequent edition of his memoir issued in 1830, however, Bell introduces experiments to prove his acquaintance with these functions of the spinal nerves at the time of the original presentation of the memoir to the Royal Society. But Magendie, giving credit to Bell for all that he had done, adheres to his own discoveries:—

> " . . Mr. Bell, led by his ingenious ideas concerning the nervous system, was very near discovering the functions of the spinal roots; still, the fact that the anterior are devoted to movement, whilst the posterior belong more particularly to sensation, seems to have escaped him; it is then to having established this fact in a positive manner, that I must limit my pretensions."

So persistently has the claim of Bell been put forward for the honour of this great discovery, and so loyal are the English to their own countrymen in supporting their scientific pretensions of all sorts, that the world has, until Flint set himself to the task of correcting the misapprehension, been entirely oblivious of the merit of Magendie.[1] Even Magendie's pupil, the great Bernard, had overlooked his master's claim until long after his death, so positively and persistently had the discovery been ascribed to Bell.

As the first part of the "Manual of the Nervous Diseases of Man" begins with the consideration of the *hyperæsthesiæ of sensation*, or neuralgia, in which the then recent discovery of the properties of the spinal nerves receives practical exemplification, this will be a convenient point for starting our inquiry. The account given by Romberg of the various forms of neuralgia, and of the physiological basis on which these nervous disorders rest, has been closely imitated by succeeding writers, without being improved. The laws of nervous action, concerned in the phenomena of neuralgia, are thus stated by Romberg: The law of isolated conduction; the law of irradiation of sensations; the law of eccentric phenomena. To illustrate the dependence of later authors, we may mention that these laws are stated by Jaccoud[1] exactly in Romberg's words. Little has been added to the subject of neuralgia in the last twenty-five years, except in respect to treatment; the greatest advance being in the use of the constant current or galvanism. Both forms of electricity had in turn excited confident expectations, which, however, failed to be realized. We find Romberg saying "that magnetism and electricity by induction were employed and given up." Amongst the discarded remedies are also mentioned "acupuncture and electropuncture of the affected nerves," the inhalation of ether and chloroform, and "the endermic use of morphia." It is a curious fact that Magendie was one of the first to use galvanism, and he was, certainly, the first to propose the introduction of a platinum needle carried down to the nerve through which the current was passed. This method of applying galvanism to cases of sciatica resisting ordinary means has been revived. Magendie brought forward successful cases, but no attention seems to have been paid to this important suggestion. Although by the efforts of Duchenne the induced current was put into its proper position as a remedy, yet for a long time previously it had been almost entirely abandoned or confined to charlatans. Soon after Faraday's discovery, the most extravagant expectations were entertained of the therapeutical value of the new form of electricity, but the nature of the remedy and the sphere of its uses were not understood, and hence the disappointment and neglect which soon followed. It was not until 1856 that Professor Robert Remak, already celebrated for his researches in embryology and the origin of species, revived the use of galvanism and demonstrated its superiority for most purposes over the Faradic current. He especially emphasized its pain-relieving power and catalytic effects. Remak experienced the usual fate of reformers. The medical profession in Berlin did not approve of his practice. They felt that it was unprofessional to use electricity, and they could not believe any good would come of a mode of practice ignoring the old and well-tried methods. Remak's pretensions were not favourably received outside of Germany. In France, Duchenne de Boulogne headed a revival of Faradic electricity, and he would not listen to anything which promised to rival his favourite *Electrisation Localisée.* When Remak went to Paris, in 1862, and demonstrated his method, and proved its extraordinary advantages under some circumstances, incredulity gave way to unbounded enthusiasm.

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[1] The Quarterly Journal of Psychological Medicine, New York, 1868, vol. ii. p. 625. See also, The Nervous System, one of the volumes of Flint's Physiology, p. 69 et seq.

Beside the therapeutical applications, the diagnostic uses of electricity were entirely unknown to Romberg. Now the relation of electro-contractility—its presence or absence in various diseases involving motility—is an important element in arriving at the seat and character of lesions. We find in Rosenthal's treatise very frequent applications of the electrical method in diagnosis, and still more frequently in therapeutics. The endermic application of morphia—one of the discarded remedies for neuralgia—consisted in the introduction of morphia into a puncture of the skin made by an ordinary grooved needle. This practice had been introduced by M. Lafargue, who was chiefly concerned in the study of the form of pustule caused by the morphia when thus inserted. The curative result was attributed to these pustules, just as tartar emetic ointment is supposed to effect a cure of internal inflammations by causing a pustular eruption on the surface. Although discarded by Romberg, this method led to the hypodermic use of morphia, for we find that in New York, so long ago as 1839, Drs. Isaac E. Taylor and Washington, influenced by the good results of Lafargue's practice in neuralgia, bethought themselves of puncturing the skin with a lancet, and injecting by an Anel's syringe a solution of morphia under the skin. It was not until 1854 that Dr. Alexander Wood, of Edinburgh, brought forward the hypodermic method as now known. Even so recently, then, as the appearance of Romberg's work, electricity and the subcutaneous use of morphia were not known to medical practice.

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[1] Traité de Pathologie Interne. Paris, 1870. Vol. i. p. 459.

Pursuing the subject of hyperæsthesia, we come to the "hyperæsthesia of the cardiac plexus." Here we have an admirable clinical picture of the paroxysms of angina, which no recent work can rival in picturesqueness and fidelity; yet in hardly any topic is more conspicuous the great advance made in the knowledge of the subject. The researches of Ludwig, Thiry, Von Bezold, the Cyon brothers, Nothnagel and others on the innervation of the heart have been made since that period. The extraordinary rise in the arterial tension, shown in the pallor of the face, ears, and limbs, the cyanosis, the fall of temperature, and the lowering of sensibility, is the chief element in the paroxysm of angina. It was the recognition of this fact that led Brunton to the important observation, that a condition marked by such spasm of the arterioles must be relieved by the inhalation of the amyl nitrite, which induces a rapid paresis or relaxation. A generalization like this would have been impossible when the mechanism of the blood-pressure, and the relation of the vaso-constrictor and vaso-dilator fibres to the vascular tonus were not known. The so-called vaso-motor system was discovered by Brown-Séquard in 1852, the year before Romberg's work appeared in its English dress. The researches of Schiff, of Ludwig, and Thiry, of the Cyon brothers, followed some time afterwards, so that the subject of the functions of the sympathetic system, the nature of the cardiac and vascular innervation, and the relation of these functions to nutrition and secretion, have been elaborated in the intervening period. We find all these facts very succinctly and yet clearly set forth by Rosenthal, who makes use of every established truth which can throw light on the subject.

In the next division of Romberg are the *anæsthesiæ of sensation*. We pass over the intervening subjects to amaurosis or anæsthesia of the retina. We are here particularly struck with the absence of the recent knowledge, which, beginning with the discovery of the ophthalmoscope, has illuminated every part of ocular pathology and therapeutics. The ophthalmoscope was described by Helmholtz in 1851. Two years afterward, Spencer Wells called the attention of the English medical profession to the new instrument, and especially to an improvement on the original mirror by Coccius, of Leipzig; but little attention was given to it until our countryman, Dr. E. Williams, of Cincinnati, showed the new instrument to some of the principal ophthalmologists of London, and published an article in the *Medical Times and Gazette* (vol. ii. 1854, pp. 7 and 30), on the physical principles embraced in the construction, and the clinical uses of the instrument. Up to this period the changes in the retina consecutive to cerebral lesions had not even been suspected. Descending neuritis, choked disks, white atrophy, and other changes which throw so much light on intra-cranial lesions, were all comprehended under the vague term amaurosis. The changes induced in the retina by albuminuria, by diabetes, etc., were equally beyond even the excursions of the scientific imagination of that period, or twenty-five years ago.

Under the head of epilepsy, we find Romberg stating that "nobody has hitherto succeeded in producing epileptic attacks in animals by lesions of the brain and spinal cord." Since that sentence was written, not only has epilepsy been induced in guinea pigs by injuries to the cord and nerves, but the acquired epilepsy has been transmitted to succeeding generations of these animals. The eclampsia of twenty-five years ago was not referred to one of its principal causes—albuminuria. In 1825 Richard Bright published his first series of cases, illustrating the forms of disease now known under his name; but we find him deploring, in 1836,[1] the little progress that had been made in the knowledge of any curative measures, and he might have added, of the pathological relations of albuminuria. In this paper Bright thus alludes to the cerebral symptoms:—

> "His headaches have been observed to become more frequent; his stomach more deranged; his vision indistinct; his hearing depraved; he is suddenly seized with a convulsive fit and becomes blind. He struggles through the attack, but again and again it returns; and before a day or a week has elapsed, worn out by the convulsions, or overwhelmed by coma, the painful history of his disease is closed."

An admirable clinical account, based by the great clinician on observation; but then nothing was known of the retinal and cerebral changes, because the ophthalmoscope was in the womb of the future, and the doctrines of uræmia were just being unfolded. In 1839 Dr. Addison described[2] the "Disorders of the Brain connected with Diseased Kidneys," as occurring in five different forms—an attempt to show nice clinical distinction. They are not confirmed by the modern observations, which have demonstrated the dependence of the various local and partial convulsions, coma, etc., on one cause.

The subject of tremors, although now far from well understood, was twenty-five years ago still more obscure. Mercurial, plumbic, and senile trembling were then only distinctly recognized. Senile trembling was confounded with paralysis agitans, and the latter was not then differentiated from sclerosis, although in 1817 Parkinson had published a work on the disease, and gave the details of one case in which sclerosis existed. It was not, however, until the clinico-pathological researches of Charcot were undertaken, that tremor as a symptom of sclerosis of certain motor ganglia was established definitely. All of our present knowledge of sclerosis, which is an important element in cerebral pathology, is recent. Posterior spinal sclerosis or progressive locomotor ataxia was known to Romberg as *tabes dorsalis*, and he gives a good clinical account of it describing its most characteristic symptoms. He recognized, also, that an atrophic change took place in the cord, and that compared with a healthy one, a diseased cord showed great reduction in size. It was not until Duchenne's classical account appeared in 1858, which was followed by more exact study of the changes in the cord, that we began to have correct notions of the nature and extent of the disease and of the symptoms. That so peculiar a malady should have waited so long for adequate clinical and pathological examination seems not a little singular, and may justify and illustrate the remark of Rosenthal:—

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[1] Guy's Hospital Reports, 1836. "Cases and Observations illustrative of Renal Disease, accompanied with the Secretion of Albuminous Urine," p. 380. Ibid. 1840. Same title, p. 101.

[2] Guy's Hospital Reports, 1839, p. 1.

> "The alarming number of cases of ataxia and other spinal diseases, observed in our country, proves that this predisposition must have its source in causes which form an intimate part of the social conditions of our time."

The other forms of ataxia were not known at all, and tabes dorsalis was regarded as a paralytic affection. It was Duchenne who pointed out that the paralysis was apparent not real, and that the difficulty of muscular movement consisted in incoördination. It must be admitted that Todd had in 1847 indicated that the posterior columns were concerned in the coördination of muscular movements, but his views were not generally accepted, and it was Duchenne who applied the physiological data to the elucidation of the clinical problem. The demonstration of the lesions involving the lateral columns, especially the singular malady, *amyotrophic lateral sclerosis*, is a very recent contribution to our knowledge, for which we are largely indebted to Charcot. Infantile paralysis, the acute spinal paralysis of the adult, glosso-labio-pharyngeal paralysis, progressive muscular atrophy are maladies of comparatively recent discovery, of which Romberg and the men of his time had no conception. A true knowledge of these diseases only became possible when physiology had prepared the way by demonstrating the functions. The existence of a trophic system of nerves, or at least of the influence of the nervous system on the function of nutrition, and the relation of the multipolar ganglion cells of the anterior cornua to this function have been contributions of the greatest value. The history of glosso-labio-pharyngeal paralysis affords us a capital illustration of the successive steps in such discoveries, for in this history we see that clinical acumen first sets apart a group of symptoms as related to certain organs; then follow the further observations which fill out the clinical history, and the disease takes its place; but to complete our knowledge the scientific study of the lesions and their relation to the symptoms remains to be accomplished. As long ago as 1841 Trousseau, the great clinician, had seen cases whose characteristics were those of glosso-labio-pharyngeal paralysis, but it remained for Duchenne in 1860 to present such a complete clinical picture that it must ever after be easily recognized. But there yet remained the task of indicating the lesions on which the symptomatology depended, and which, although located from the physiological standpoint, needed the pathological demonstration. We owe to Charcot and Joffroy and Duchenne the pathological research which determined the lesions, and they were followed by Leyden in confirmation. There have been, probably, in the field of spinal diseases no investigations more important than those which have indicated the seat of the trophic diseases.

The influence of syphilis in causing sclerosis, and degeneration of the anterior lateral and posterior columns of the spinal cord, and in bringing about trophic disturbances by inducing atrophy of the cells of the anterior cornua, has been only recently ascertained through the labours of Moxon, Charcot, and Gombault, and Delafield, of New York. The whole subject of syphilis of the nervous system—a subject, the importance of which can be hardly over-estimated—is a very recent contribution to knowledge. The first published example of syphiloma of the spinal meninges seems to have been that of Rosenthal in 1865, but in 1861 Brown-Séquard narrated the details of a case in which unilateral lesions of the cord had been produced by syphilitic deposits. The gummata of the *dura*, of the *pia*, etc., were well described by E. Wagner in 1862 and 1865. They had been carefully studied by Virchow ("*Die krankhaften Geschwülste*," zweiter Band —*Granulationsgeschwülste*). In looking up the origin of the word *gummata* Virchow refers it to Nicolaus Massa (*Laisinus* APHRODISIACUS) who, after describing syphilitic swellings of the bones of the chest and forehead, etc., says, "*quæ a vulgaribus* GUMMATA *appellantur*". Of course nothing was then known of the diffusion of syphilis to the parts within. Indeed, the present knowledge of visceral syphilis is a product of the researches of the past twenty years—most of it has been acquired within ten years. Beside Wagner, Virchow, Rindfleisch, Von Barensprung, and others of Germany; Charcot and Gombault, Ricord, and especially Gros and Lancereaux (*Des Affections Nerv. Syphilitiques*, 1861), of France; Moxon, Buzzard (*Syphilis of the Nervous System*), Allbutt, Jackson, and others of England, and Keyes of this country, have made valuable additions to our knowledge of syphilitic affections of the nervous system. Amongst the most important of these affections, which have been studied recently, are the syphilitic lesions of the basilar and other arteries of the base of the brain, which take the form of neoplasms, either originating in the tunics of the vessels or developing in them secondarily. The writer has seen such a case in which a neoplasm of sufficient size to reach to and irritate the fifth nerve, formed in the basilar, death being caused suddenly by rupture of the vessel. These lesions of the vessels, as all the other modes of manifestation of syphiloma of the brain, were sealed books to Romberg and his contemporaries so late as the appearance of the English edition in 1853.

The late studies in the localization of functions of the brain have made very important additions to our knowledge. What opinions, soever, may be entertained of Gall and his doctrines, it is incontestably true, that he prepared the way for cerebral localizations. He first indicated the seat of the language faculty in the anterior lobes. "I regard as the organ of verbal memory," says Gall, "that cerebral part which rests on the posterior half of the roof of the orbit." (Gall's Works, translated by Lewis, vol. v. p. 11.) This is sufficiently near the third convolution to constitute it a remarkable statement to be made at the beginning of this century. With facts which subsequent investigations have confirmed, or at least rendered probable, Gall associated the oddities and mysticisms of phrenology, which his followers so accentuated, that a general distrust arose against them on all sides. Gall was compelled to suspend his lectures in Vienna, in 1802, "because his doctrines were considered dangerous to religion," but he was received at various cities in Europe, with a degree of enthusiasm, and his doctrines excited an interest, which, at this time, we can scarcely comprehend. "Everywhere," says Gall, "I experienced the most flattering reception. Sovereigns, ministers, philosophers, legislators, artists, seconded my designs on all occasions, augmenting my collection," etc. "Great indeed was the ardor excited amongst the Parisians, by the presence of the man who, as they supposed, could tell their fortunes by their heads." But Napoleon was First Consul, and Napoleon did not approve of phrenology, and was loudly indignant when the Institute received and considered the memoir of Gall and Spurzheim. Cuvier, then head of the biological department, reported adversely to their claim, and the journals of Paris were set on to ridicule them.

Such was the history of the first attempts to localize the cerebral functions. The unfortunate direction given to the studies and the character and position of the new apostles of phrenology, who came on the stage after Gall had left it, had a most injurious effect on the progress of this branch of knowledge. Covered with ridicule, abandoned to charlatans, it was a long time before serious attempts were again made to ascertain the locality of functions. Bouillaud, in 1825, brought forward cases showing that aphasia was associated with lesions of the anterior lobes. The next most important step was by Dr. Dax, who showed, in 1836, by cases, that aphasia was dependent on lesions of the *left anterior lobe.* But the memoir which has given the greatest impulse to the doctrine of cerebral localization, and has excited an universal interest in the subject, was that of Broca, in 1866. He gave the name *aphasia* to the loss of the faculty of articulate language, and as he first designated the third left frontal convolution as the seat of the language faculty, it has received the name of Broca's convolution. Since that time, the papers, memoirs, and cases published on this topic are innumerable; but a few have really advanced our knowledge. The researches of Ferrier and of Fritsch and Hitzig are amongst the first of those having contributed new truths. How much soever of fact there may be in the present knowledge of cerebral localization, it is entirely within the period embraced in our inquiry.

We should not dismiss this topic without making some allusion to a rather memorable discussion in respect to priority of investigations in the electrical excitability of the cerebral hemispheres. Fritsch and Hitzig published a volume of researches on galvanic excitation. As stated above, Dr. Ferrier, of London, undertook similar researches, but he pursued different methods, employing the faradic current; he certainly, considerably, enlarged the area of knowledge of this subject, which he very modestly put before the world. The appearance of Dr. Ferrier's book was made the occasion of very ill-tempered, not to say violent criticism by Fritsch and Hitzig, who seem disposed to arrogate to themselves the right to pursue all such researches. Under these circumstances it may be useful to point out that the investigations of Fritsch and Hitzig, how meritorious soever they may be and are, did not constitute a new departure: For many years past similar methods had been pursued, and universal attention had been directed to the subject, which for the time being, indeed, was the predominant topic in medical journalism. There had been the well-known experiments of Magendie, Longet, Flourens, Vulpian, and others, made to ascertain the excitability of the cerebral hemispheres. Then followed the researches of Leyden, among others (*Beiträge und Untersuchungen zur Physiologie und Pathologie des Gehirns.* 1. *Ueber Hirndruck und Hirnbewegungen. Virchow's Archiv*, Band 37, s. 519). A still more extended series of researches was undertaken by Dr. F. Pagenstecher, whose brochure is entitled *Experimente und Studien über Gehirndruck*, and was published at Heidelberg in 1871. Nothnagel took up the same topic, and published a prolonged investigation in *Virchow's Archiv*, in 1873 (Band 57, p. 184, and succeeding numbers). Fournier undertook the same line of research (*Recherches exper. sur la Funct. du Cerveau*, 1873. Paris.) about the same time. Whilst thus in several countries the subject of cerebral localization was receiving much attention, Fritsch and Hitzig revived the method of Magendie, and sought to determine the functions of the brain by electrical (galvanic) excitation. In England, Ferrier undertook a similar, but not the same line of investigation, with the view as stated above, of determining the probable verity of Dr. Hughlings-Jackson's conclusions respecting the existence of motor centres in the cerebral cortex. The arrogant pretensions and the abusive personalities, indulged in by the German investigators, do not appear to be justified, in the light afforded by this brief history.

If we take up now the work of Rosenthal, which represents the latest phase of German neurological medicine, we obtain a view, from a different standpoint, of the most recent contributions to this subject. We are at once struck with the different names occupying the position of authorities. In Romberg we find frequent references to Sir Charles Bell, Shaw, Sir Benjamin Brodie, Fothergill, Cheyne, Curling, Travers, Home, Sir Astley Cooper, Abercrombie, and numerous other Englishmen; to Magendie, Tanquerel, Calmeil, Andral, Laennec, Esquirol, Lallemand, and numerous other Frenchmen; but the Germans, although quoted freely, occupy an inferior position. This inferiority, inferred from the nationality of the authorities quoted, was actually the position of the German authorities during the first half of this century. The lustre of the French school during this period was due to the remarkable discoveries, culminating in auscultation, probably, which it had the good fortune to make; and Englishmen were but little less successful in making such solid contributions to medical knowledge as Bright's disease, etc. But in Rosenthal, as in medical literature generally, we find that the tide of investigation and discovery has set in from Germany, and now we find foremost such names as Virchow, Eulenberg, Friedreich, Helmholz, Leyden, Rokitansky, Rindfleisch, and others greatly too numerous to be mentioned here.

The work of Rosenthal begins, as is usual in these treatises, with inflammation of the cerebral meninges, and here we meet with an important modern acquisition in pachymeningitis with the so-called cysts of the arachnoid, first rightly interpreted by Virchow, in 1857, as inflammatory in origin. Under the head of thrombosis of the sinuses is noted the striking fact that, in erysipelas and carbuncle of the face, an infective inflammation may extend by the facial and ophthalmic veins to the transverse and cavernous sinuses. It is since 1850, and chiefly since 1860, that the nature of the disease in the cerebral arteries leading to cerebral hemorrhage, has been ascertained. It was especially the researches of Charcot and Bouchard, in 1868, that made plain the arterial degenerations—miliary aneurisms—on which the hemorrhage depends. The subject of thrombosis and embolism, originally brought forward by Virchow, has attained the highest development in the researches of Cohnheim. The various kinds of emboli, infective and non-infective, the results of embolic blocking of cerebral vessels, immediate and remote, amongst the most important topics in pathology, are results of recent investigations. One reads now with a smile the observation of Hughes Bennett, in the last edition of his *Clinical Medicine* (New York, 1860, p. 356): "Virchow has sought to elevate this simple matter into pathological doctrines, under the name of *Thrombosis* and *Embolismus*." A remarkable extension has taken place since 1860 in the pathogenetic importance of these vascular lesions, especially since the publication of Cohnheim's classical *Untersuchungen ueber die embolischen Processe*, which threw new light on the subject, especially in relation to the mechanism of infarctions and the nature of "terminal arteries." It was not until a correct notion of capillary thrombosis and chronic endarteritis was obtained that softening of the brain took its proper place as a symptom, and ceased to be regarded as a substantive disease. A study of the changes caused in the functions of the brain by embolic blocking has led to the differentiation of embolism and cerebral hemorrhage, before that confounded. The relation of mitral and aortic disease to aphasia and right hemiplegia has been rendered perfectly clear. It would be hardly possible, indeed, to over-estimate the importance of these pathological doctrines of thrombosis and embolismus, for which we are so much indebted to Virchow.

Although cerebral tumours have been long recognized, yet the difficulties of diagnosis were so great that the subject remained an almost *terra incognita.* The publication of Ladame's work (*Symp. u Diag. d. Hirngeschwülste*, 1865), and a preliminary paper in the *Arch. Gén.* the same year, awakened renewed interest. The progress of knowledge of cerebral localizations, the more accurate definition of the functions of the spinal nerves, and the discovery of the retinal changes by the ophthalmoscope, have immensely increased the certainty of diagnosis. It is a curious fact, which we may mention in passing, that Hughes Bennett, the doughty opponent of Virchow over leucocythemia, carried a considerable tumour in the left hemisphere, without its producing any symptoms and was recognized only at the *post-mortem.* As an illustration of the uncertain opinions which were in Romberg's time held in respect to the functions of the cranial nerves, we find him stating, vol ii. p. 290: "According to the law of crucial conduction that governs the central apparatus of the brain, the opposite hemisphere is the seat of disease, and the paralysis of the muscles of the eye is found on the same side as the paralysis of the extremities." In the case of a tumour involving the motor tract of the crus, and also the third nerve, paralysis is on the opposite side in the body and limbs, and on the same side in the eye. The cranial nerves, although probably closely connected by commissural fibres, do not decussate, except the seventh, which, as Vulpian was the first to show, decussates along the floor of the fourth ventricle, and the optic which have a double arrangement, not necessary to describe. When such errors as that just mentioned existed, the diagnosis of intra-cranial growths was not possible. And as the retinal changes were not even suspected, the old observers were not afforded the important aid derived from the use of the ophthalmoscope.

Important additions have been made to the knowledge of the functions and diseases of the *medulla oblongata*, until recently a region, although possessed of a "vital knot," of a respiratory centre, etc., little known. Most of our knowledge of the pathological relations of this interesting organ has been obtained since 1861. Anæmia, hyperæmia, hemorrhage, acute inflammation have been pretty accurately defined. The most interesting of the diseases is, however, progressive bulbar paralysis—Duchenne's disease, already referred to. Beside the actual lesions of the medulla, the complex functions of this organ enters largely into questions of diagnosis. It contains motor tracts—the pyramidal and sensory tracts, the limits of which are even yet obscure; centres of reflex movements, respiratory centres, two in number, and one in each half of the medulla; cardiac centres—accelerator and inhibitive of movements; centres of speech; centre of deglutition; vaso-motor centre; heat-regulating centre; centre for regulating nutrition. Such are the complicated functions assigned to the medulla oblongata by the most recent researches.

The variations in symptoms produced in the different regions of the cord, and in the different columns, are now capable of more exact interpretations by reason of the recent additions to our knowledge of the functions of these several parts.

> "In circumscribed myelitis of the cervical region, paralysis first occurs in the upper limbs, and later in the lower limbs with disturbances of sensation and reflex excitability. . . . . Infantile spinal paralysis results according to the investigations of Prévost, Charcot, Joffroy, Recklinghausen, Roth, and Leyden, from an acute degeneration of the cells of the anterior horns. . . . . A similar disease has been observed in adults by Duchenne, Frey, Bernhardt, Erb, etc. According to Gombault, Cornil, and Lépine, it is due to fatty or pigmentary degeneration of the cells of the anterior horns, and is sometimes manifested by paralysis of both upper limbs. . . . . There is still another form of cervical paraplegia due to atrophy of the cells of the anterior gray horns. This includes the double paralysis of the arms which occurs in the beginning of amyotrophic lateral sclerosis, and in certain forms of progressive muscular atrophy. The cases of paralysis belonging to this latter category may be considered as amyotrophic forms of spinal cervical paraplegia." (Rosenthal.)

The first observation made on the seat of the lesions in infantile spinal paralysis was that of Cornil, 1864, but the significance of these changes was not manifest until Prévost and Vulpian ascertained the existence of atrophy and partial sclerosis of the left anterior horn and atrophy of the anterior roots. Next, Charcot and Joffroy observed atrophy and deformity of the anterior horns and the associated lesions, so that this disease is now thoroughly well understood. Notwithstanding this disease was recognized in the last century, its real nature was not comprehended until the late investigations were undertaken. Duchenne was the first (1861) to recognize the fact that the same form of disease occurs sometimes in adults. Gombault published the first case in which an autopsy revealed the lesions which had been predicted by Duchenne, Charcot, Cornil, and Lépine. Bernhardt and Seguin, in this country, have since published confirmatory observations, so that now this form of paralysis, so common in children, must be regarded as a disease of adults also.

Of the numerous and important contributions made to neuropathology by Prof. Charcot, probably none are more productive of good results than those relating to hysteria, hystero-epilepsy, etc. We do not include in this remark the strange delusions of metallotherapy. In these studies we have the first attempts to establish a true pathological basis for a group of neuroses, which have heretofore eluded exact statement. Other than these, the results of modern work in the hysterical affections has not produced material commensurate with the labour. In epilepsy, however, there have been numerous and important additions to previous information. Beside the artificial production of epilepsy already mentioned, various facts of high significance have been developed by recent investigations. Nothnagel, in 1868, demonstrated the existence of a "spasm centre" (Virchow's *Archiv*, Band xi.) in the medulla oblongata. Westphal proved by experiments on guinea-pigs, in 1871, the immediate production of epileptiform attacks by injury to the brain, such as Brown-Séquard had demonstrated to follow injuries some time after they had been received. Probably the most useful additions made to our knowledge of epilepsy recently, are the clinico-pathological investigations of Hughlings-Jackson. The researches of Ferrier, undertaken for this purpose, were guided by Jackson's notions of the cortical motor centres, and whilst they confirmed the deductions from clinical facts, they widened their scope and added to their data. The treatment of epilepsy has received a valuable addition in the bromide of potassium, and the late dictum of Voisin, who has shown that anæsthesia of the fauces is the proof of the physiological action of the remedy, during the course of its administration in the treatment of epilepsy.

The reader will doubtless agree with us that very important additions have been made to neurological medicine within the past thirty years. In fact, no subject remains as it was in 1850; all have experienced more or less extensive changes, and several new maladies receive interpretation, and remain as permanent additions to the catalogue of human ills. The work of Rosenthal represents very fairly the most recent phase of neurological medicine. It is concise, but clear; small, but comprehensive. It is a more difficult task to write a work than to compile one. An author may not contribute an original idea, and yet present a work having freshness and novelty, by carefully working up the whole material in the crucible of his mind, and then presenting the pure product free from errors and crudities and a meretricious rhetoric. Although Rosenthal is not unmindful of the work of his countrymen, he does not overlook French, English, and American contributions, and apportions the merit very fairly as it is due. He attempts no fine writing. The reader will miss the clinical portraitures, the spirited descriptions of dramatic situations, the word painting by which the objective symptoms of a disease are by some writers rendered memorable. The translator has performed his task very well. The text has been a good deal abbreviated but without sacrificing any portion of the matter. There are but few typographical errors, and the references are generally correct. On the whole, Rosenthal's work is a highly satisfactory one for a place in the series now publishing, and can be commended to any one desiring a clear, accurate, modern, and sufficiently full but yet concise treatise on diseases of the nervous system. R. B.

ART. XXIII.—*St. Thomas's Hospital Reports.* New series. Edited by Dr. ROBERT CORY and Mr. FRANCIS MASON. Vol. IX. 8vo., pp. xiv., 357. London: J. & A. Churchill, 1879.

THE present volume, issuing from St. Thomas's Hospital, contains the reports, statistical and descriptive, of this well-known institution during the previous year, in its obstetrical, medical, surgical, and ophthalmic departments, with a summary of the cases, some of the more interesting being reported analytically. In addition to these we find eighteen contributions from members of the staff and others. We shall group together and notice first those which pertain to medicine and gynæcology.

Dr. HENRY GERVIS, Obstetric Physician to the hospital, contributes the initial article upon *The Treatment of Epithelioma of the Uterus by Erasion*, in which he recommends the free use of the curette, followed by the exhibition of the acid nitrate of mercury applied upon cotton-wool. Erasion is particularly applicable to cases where the écraseur has removed part, but not all of the diseased structure, which, as Sims pointed out, generally extends upward along the cervical canal. Twenty-two cases treated by erasion during the past year gave satisfactory results: one presented symptoms of pelvic peritonitis, but subsequently recovered. It is sometimes necessary to repeat the operation several times before a permanent cure is effected.

Mr. WALTER KILNER, M.B., contributes a practical paper, advocating the *Salicylates of Calcium and Bismuth in the Diarrhœa of Children*, more particularly in the serous discharges of summer complaint. The cases most likely to be benefited are, "principally those in which there exist copious and liquid dejections, with or without the admixture of blood, and also when there is much fetor depending upon fermenting or decomposing materials in the intestines." They are contraindicated in lienteric diarrhœa; and when the discharge is due to reflex irritation, as in teething. These salts are made extemporaneously, by mixing salicylic acid (11 parts) and prepared chalk (4 parts), which make about 12½ parts salicylate of calcium, the dose of which is from two to five grains for a child two years old, given in a mixture with syrup and water. For the bismuth salt about 12 of the acid to 7 of the oxide will form about 18 parts of the salt, which is given in the same doses. The results reported from one of these prescriptions given every three hours, with the occasional use of starch enemata, were very satisfactory in a large dispensary practice.

In a very practical article on *Baths in Hyperpyrexia* (second paper) Dr. WM. M. ORD communicates the notes of several cases. The paper concludes as follows:—

> "To sum up the general results of observation and reflection the following propositions may be laid down: that the graduated bath, reduced, during a period of from twenty minutes to thirty minutes, from between 93° and 100° to between 60° and 70° Fahr., is a powerful agent in the reduction of febrile temperature; that in enteric fever it is most efficient and most safely applied early in the disease; that it is not contraindicated by intestinal, cerebral, or pulmonary complication, but, on the contrary, distinctly tends to check them; that it is contraindicated by excessive feebleness or rapidity of the pulse, or by great exhaustion; that it is desirable in many cases of intense fever to use the bath more than once; in fact, to repeat it so long as the fever is unchecked, but not to repeat it at shorter intervals than twelve hours, an apparent revival of the temperature often subsiding after such a period.
>
> "And I am of the opinion that the systematic use of this kind of bath, as early as the seventh or eighth day of fever, is likely to contribute importantly to the reduction of the mortality from enteric fever in hospitals."

Following this is an *Analysis of, and Remarks on, Seventy-one Cases of Enteric Fever treated in St. Thomas's Hospital during the past year*, by W. M. ORD, M.D., and SEYMOUR TAYLOR, M.B., during which period seven cases of relapse and recrudescence appeared, with one death among them; the entire mortality was eight (11.2 per cent.). More than half the cases were admitted during the months of September, October, and November. In about 22½ per cent. no rash was observed. In more than one-third of the cases (27), diarrhœa was altogether absent; indeed, in the majority of these, obstinate constipation existed. The latter condition seemed to favour relapse, for no less than two cases of relapse and four of recrudescence were traceable to the use of enemata rendered necessary by the constipation. Indican in the urine was very commonly present in all the cases, and albumen was detected in twenty (or nearly one-third), in five of which previous Bright's disease was suspected. In one case the albuminuria seemed to have been produced by salicylate of soda (gr. xx every three hours). Intestinal hemorrhage occurred in six cases, one of which died. The treatment was mainly expectant; though mineral acids, or effervescing draughts, and baths, were used with benefit. Delirium and sleeplessness were relieved by chloral, bromide of potassium, or opium. Stimulants were only used in the severe cases, and then only moderately. Sulphuric acid and opium were used for the diarrhœa, or morphia suppositories given when necessary.

A thesis by ROBERT CORY, M.D., *On the Relation of Cow-Pox and Horse-Pox to Smallpox*, contains an interesting *résumé* of recent contributions to the subject, with some original experiments. The writer favours the view of Jenner, that vaccinia is only modified, or bovine smallpox, and that horse-pox has the same origin.

A short and interesting report on the *Working of the Sale of Food and Drugs Act* is furnished by Mr. ALBERT J. BENAYS, who also contributes a note on the use of *Manganous Carbon* as a filter for drinking water.

Dr. BRISTOWE presents some observations upon *Cases of Chorea*, in which he dwells upon the connection between chorea and rheumatism (in five out of eight cases); and the coexistence, in the vast majority of cases, of heart disease, though not always recognized during life. Loss of speech, more or less complete, occurs frequently; and there is manifest loss of power in the affected muscles; in some cases, as pointed out by Todd, paralysis replaces chorea, and paraplegia or hemiplegia in children is occasionally the earliest indication of the presence of chorea. He also observes impairment of sensation and of intelligence. In the great majority of cases, chorea is of limited course, but may become chronic and of indefinite duration. No specific plan of treatment was followed beyond paying attention to the relief of symptoms, restoring the bodily functions by tonics, and warding off complications, like rheumatism.

Many noteworthy points, also, of pathology and treatment are suggested by the short clinical notes of cases included in the analyses furnished under the annual summary of patients treated in the several departments of the hospital, already referred to at the beginning of this notice. In truth, we observe considerable variety, and much interesting material in the present volume of this series. F. W.

The first of the Surgical articles, by Mr. H. H. CLUTTON, treats of a subject in which practical surgeons can never lose interest. Its title is, *Remarks on a few Cases of Strangulated Hernia*, and it is based upon an experience of eighteen cases in which, during two years, the author found it necessary to do a cutting operation. That so large a number of cases should fall to the lot of any one surgeon, in so short a period of time, may seem strange to the American reader, but really presents nothing unusual in the annals of English practice. Why cases of strangulated hernia should be of so much more frequent occurrence in London than in our American cities is a question which we have revolved in our mind for many years without finding a satisfactory answer to it. That such is the fact there can be no doubt, as it is shown to be true by examining the report of any of the London hospitals. But two probable reasons for this state of things have hitherto occurred to us, namely, that in England more reliance is placed upon the exertion of simple brute force in the labouring class of the community, and that possibly the same class take better care of themselves in this country, and sooner procure professional aid.

Apart from the interest attaching to the mere number of cases related in Mr. Clutton's paper, each case, which is given in detail, presents matter for thought. So great an authority as Sir James Paget has stated that in a very large experience he found instruction from each case. Indeed, the individuality of cases of strangulated hernia is so marked that no surgeon, when he begins to operate, can justly feel any confidence that the case before him will present exactly the same features as he has met with in any other.

Of Mr. Clutton's cases twelve were femoral and six inguinal. In twelve cases the sac was opened; in six the operation was extra-peritoneal. Eight of the cases were treated antiseptically, and of these none died. Ten cases were simply dressed with carbolized oil, and of these three died. It must not be inferred, however, that these died from the neglect of antiseptic precautions, as in each of them the gut was irreparably injured before the operation was undertaken, and fecal extravasation caused death; nor can these fatal cases furnish an argument against opening the sac, as had been done in each of them, as an intact sac will not deliver from the dangers attending rupture of the gut.

In the body of his paper Mr. Clutton speaks of three cases of congenital hernia; in the table at its close he gives four as the number of cases of that character occurring to him. In all it was found necessary to open the sac, and all did well. The limits of age were twenty months and seventy-four years; both extremes recovering. In all the cases drainage by a tube or catgut was resorted to.

Mr. Clutton's paper is a good one, possessing the very unusual fault of being too short. It might have been advantageously extended by giving more anatomical details.

Mr. FRANCIS MASON, in successive papers, narrates a *Case of Congenital Malformation of the Rectum and External Organs of Generation in a Patient aged Nine*, and one of *Nine Toes on the Left Foot*. The first case was one in which—

> "The scrotum was slightly separated in the median line, the sides somewhat resembling two slender labia majora in women, although each contained a testicle. A glans penis placed in the position of the clitoris was, like the testicles, of the usual size in a boy of the patient's age. There was no meatus or urethra connected with the under surface of the glans, but a shallow groove existed, indicating slight hypospadia. About the situation of the meatus of the urethra in women was a circular orifice the size of a quill pen, through which the urine and feces passed."

The subject of this unfortunate condition of things was able to control his urine, but passed his feces involuntarily. It was possible to introduce a catheter into the bladder, and at the same time pass a probe into the rectum. At the time of his birth an attempt had been made to form an anus at the usual site, but the gut had not been reached. There being no urgency in the case, it is held under consideration by Mr. Mason. By illustrations the actual condition of things is made clear. Considerable space is devoted by Mr. Mason to show the extreme rarity of this variety of malformation.

Mr. Mason's second case is especially interesting both on account of the large number of the extra digits, and because it is accompanied with an account of the anatomy of the parts, which was rendered possible from the fact that so great deformity of the leg existed as to require amputation of the member. Excepting the first or innermost toe, each one was fully supplied with flexor and extensor tendons. There would appear to have been eight metatarsal bones. Nothing is said of the condition of the tarsal bones, nor of the vascular supply.

Anatomical Variations, by ROBERT W. REID, M.D., and SEYMOUR TAYLOR, M.B., relates sixteen distinct muscular variations in thirty-five bodies dissected. That so large a number should be found to exist in so few bodies goes to show how common such variations are—a fact well known to every practical anatomist. When we add that they are as inconsequential as they are frequent, we have said about all that will interest the general reader about this paper.

Notes on the Diagnosis of Tobacco Amblyopia, by Mr. EDWARD NETTLESHIP, is a paper well calculated to strike dismay into the hearts of consumers of the nicotian weed. It contains records of no less than twenty-three cases observed by its author, of which the details are given with much accuracy.

Mr. Nettleship lays stress upon the facts that the central part of the field of vision is the part first affected, while the periphery of it is not contracted, thus marking an important distinction between this affection and wasting of the nerves, or amaurosis. In nicotic amblyopia the sight is always least impaired in a dim light, and the functional defect is always associated with a scotoma, extending from the yellow spot to the disk. This scotoma is relative, not absolute, and is often unnoticed by the patient. The existence of these scotomata has been long known, but it was not until the recent investigations of Förster and Hirschberg that their association with the abuse of tobacco was clearly recognized. The susceptibility of these scotomata varies markedly for different colours, being especially apparent in the case of green and red. The scotoma is invariably symmetrical in both eyes.

Mr. Nettleship is inclined to doubt the possibility of alcohol producing this form of amblyopia, and his experience has led him to believe that total abstinence from the use of tobacco is essential to a cure. The cases upon which his observations are based are given in detail, but cannot be abstracted so as to be of interest.

Mr. WILLIAM MACCORMAC relates a *Case of Old-standing Thyroid Dislocation of the Femur in which Excision was successfully performed.* The patient was a sailor, 19 years old, who had sustained an injury twenty months previously. The dislocation had been recognized, and frequent and persevering attempts had been made to accomplish its reduction in a hospital at the Mauritius. About ten months later these attempts were repeated in a London hospital, and failing, tenotomy had been resorted to without any good result. Abduction and eversion were very well marked when he first came under Mr. MacCormac's care, who at once renewed the attempts at reduction, but without avail. Finally it was determined to resect the head of the femur, which was successfully done. It should be said that the original aim of the operation was to divide fibrous bands and adhesions, but the acetabulum being found filled up the head of the femur was removed, and a fairly useful limb resulted. The case was treated antiseptically. Upon recovery the shortening was found to amount to three inches.

The next article is one entitled *Rough Notes on Ambulance Work in Turkey*, by F. M. SANDWITH. It is an interesting, and at times vivid description of medical experience during the Turco-Servian and Russo-Turkish wars. The usual very unsatisfactory nature of field surgery is well illustrated, intensified in this case by the very low organization existing in the Turkish army. Mr. Sandwith saw but two ligations of large arteries done, in the course of a large and varied experience, and as in those cases where the larger vessels are injured death is very speedy, he thinks the tourniquets so largely sent to the front are of little value. · He only saw their use resorted to in one instance, and in that one no vessel was injured, while gangrene resulted from its long-continued application.

The same scarcity of bayonet wounds was noticed in this as in most other modern contests. Plaster-of-Paris dressings were found to be objectionable on account of the accumulations of the filth and vermin incident to their use. Despite the deplorable sanitary surroundings which environed Mr. Sandwith in the neighbourhood of the Shipka Pass and elsewhere, no undoubted cases of hospital gangrene were noticed by him. In almost all cases of amputation the circular method was adopted.

It is impossible in the narrow limits of this notice to follow Mr. Sandwith through his interesting paper. The number of matters touched upon is very great, and the subject is in consequence constantly changing. While we may wonder at its being included in a record of work done at St. Thomas's Hospital, it adds much to the attractiveness of the volume, if we can properly apply such an epithet to a paper which places before us an account of horrid brutality and remorseless cruelty. We doubt very much whether any war contained in the annals of our race has presented examples of more pitiable fiendishness than occurred in this one, carried on in the midst of the boasted civilization of this century—nor are we acquainted with anything better suited to increase the numbers of the Peace Society. Hardly any reader can rise from the perusal of this o'er true tale of Mr. Sandwith without an instinctive longing for the advent of that golden age when wars shall cease.

Mr. H. H. CLUTTON contributes a short paper on *Martin's Rubber Bandages*, fully endorsing the American opinion of their value in the treatment of ulcers. Mr. Clutton has had especial experience with these bandages in varicose ulcers, and has yet to meet with any form of ulcer uncomplicated with syphilitic taint in which the treatment has not proved successful. Where a syphilitic taint does exist, of course the use of the bandage must be supplemented with proper constitutional treatment. Mr. Clutton has used only English-made bandages, and as his success has been uniform, he thinks Dr. Martin's fears that they may not prove as useful as those made on this side of the Atlantic are unfounded. Mr. Clutton very gracefully accords to Dr. Martin a full meed of credit for his valuable suggestion.

The remaining surgical articles in this volume are the *Surgical Report for* 1878, by HENRY PERCY POTTER, F.R.C.S., and *the Report of the Ophthalmic Department* for the same year by A. D. DAVIDSON, Ophthalmic Clinical Assistant. Both of these are statistical, and do not admit of condensation. We notice that altogether there were treated fifty-three cases of hernia, strangulated and otherwise, in wards which contain an aggregate of two hundred and twenty surgical beds. Eight cases of pyæmia and fifteen of erysipelas occurred.

The *Prospectus of St. Thomas's Medical School*, consisting of 32 pages, which is appended to the book, is especially noticeable from containing a very interesting historical sketch of the rise and progress of St. Thomas's Hospital from its foundation, about the year 1207. In it are contained many antiquarian facts which will be interesting to the casual reader.

S. A.

ART. XXIV.—*A Manual of Pathological Histology.* By V. CORNIL, Assistant Professor in the Faculty of Medicine of Paris, and L. RANVIER, Professor in the College of France. *Translated, with notes and additions*, by E. O. SHAKESPEARE, A.M., M.D., Lecturer on Refractive Ophthalmic Surgery in the University of Pennsylvania, and J. HENRY C. SIMES, M.D., Demonstrator of Patholological Histology, and Lecturer on Histology in the University of Pennsylvania. 8vo. pp. 784. Philadelphia: Henry C. Lea, 1880.

THE practical interest shown in pathological histology is well recorded by the publication of a work on this subject, which, at first sight, seems to belong to the past rather than the present. Although an interval of ten years between the beginning of the original edition and that of the translation may seem a long one, we shall find that a strong effort has been made to appreciably shorten this space by such means as commend themselves to those most concerned.

The publication of the volume now before us indicates, first, that there is a demand for such a work; in the second place, that it is the opinion of the publisher's advisers that this individual work, though in part apparently ten years old, is still the best in existence; and, we are assured that the translators are to introduce such changes as are to make their work better than the best.

The reviewer is thoroughly agreed with the publisher as to the demand for the best work on pathological histology, and it consequently becomes his task to present an opinion as to the merits of the original publication, and to pay special attention to the value of such modifications as have taken place in the translation.

The earlier parts of Cornil and Ranvier's "Pathological Histology" made their appearance soon after the time when Rindfleisch published the first portions of his work on the same subject, and the latter volume was not completed when the first or general part of Cornil and Ranvier's Manual was in print. The comparatively early completion of the text-book of Rindfleisch may have made it seem unnecessary for Cornil and Ranvier to hasten in the finishing of their own labours. There were undoubtedly other motives which were the occasion of the long delay. Perhaps the political situation in France, which, for the time being, made Cornil more of a politician than physician. The pronounced tendency of Ranvier's mind towards normal histology, and the constant difficulties connected with the study of this subject met with and often surmounted by him, may have led him to feel the width of the gap which lay between the immediately possible discoveries in the two extremes of histology. Certainly of late years the name of Ranvier is so closely identified with histology pure and simple, that it is but rarely met with in connection with investigations in pathological questions. Cornil's star, too, seems to fade from the sky of politics as the republic replaces the empire, and his name more often reappears in connection with the practice than with the science of medicine. It seems to one moderately familiar with the events of the past decade in and about Paris, that the best work in the original of the translation must have been wrought long before its completed publication, for neither immediately before, during, nor after the siege of Paris were the times propitious for that sort of work, which, above all, demands time, quiet, and freedom from other absorbing interests.

It will not surprise the reader who may admit as possible the few generalizations which have thus far crept in, almost unawares, that *le Manuel d'Histologie Pathologique*, though, at the date of its publication, well up to and even in advance of the times in certain respects, was soon found to contain certain gaps which demanded early filling, and also held matter which required extensive overhauling. In 1876 a revision and completion of the French work enabled the authors to make such alterations as they deemed advisable, and it was then, on the whole, the best collective work treating of the subject,

The one fault which prominently appeared was the merely partial incorporation of much of the contemporaneous work which had appeared mainly in Germany and, to a less extent, elsewhere. Although the authors inform us in the preface that they belong to no school, French or German, and although the nature of their work shows the thoroughness characteristic of German method, still there is so much valuable and thoroughly Teutonic material which is conspicuous by its absence, that much necessary criticism would have been spared and the value of the book increased were the work more general and less individual.

The other side, however, may be supported by very strong arguments, and what the book is, rather than what it might be, is of the chief importance.

It has been found difficult by its authors, as was the case earlier with Rindfleisch, to make a sharply defined distinction between general pathology, pathological anatomy, and pathological histology, so that all of these subjects come under the eye of the reader to a greater or less extent. Although there are largely special works in the former departments, there is no exclusive treatise on pathological histology, and it is undoubtedly to the advantage of the student that such is the case. Most of us are too little informed in many of the simplest facts of morbid anatomy to realize the importance, or even interest, of the information which the study of the alteration of the tissues brings to light. Pathological histology may almost be considered as the pathological anatomy of the present, so much does a comprehension of the gross appearances depend upon the knowledge of the minuter changes which may have taken place.

In preparing the translation Drs. Shakespeare and Simes have felt that thorough alterations were necessary in the matter of tumours, tuberculosis, the bloodvessels, and the mammary gland; yet these subjects by no means represent the only ones in which they have found it necessary to make changes. As they have felt bound, in the main, to include parenthetically the desired modifications, sudden transitions are the necessary result of the prominence assigned to the translation. To rewrite the work would have, perhaps, given the best results, but it would then have been the pathological histology of some other than Cornil and Ranvier.

According to the ideas of general pathology and pathological histology held by the authors and translators are to be considered their views of the changes in individual organs. It is, therefore, advisable to regard with special attention the general consideration of the alterations taking place in cells, intercellular substance, and tissues, as the changes in groups of tissues and organs are directly dependent on the former. A brief review of the normal tissues and their collective arrangement precedes that of the pathological changes which take place in them, and we can feel sure that work in this department, having Ranvier's name connected with it, does not admit of any other criticism than that which is the direct result of the employment of his methods and the use of such additional means as may permit a more accurate or a more extended study.

The alterations of cells and tissues are grouped under the heads of nutrition and formation. The functional changes, which are so important in health and disease, are so often attended with such transitory morphological changes, that the latter, if existing, escape observation, or are so intimately connected with nutritive and formative disturbances as to represent an actual part of these. Of the apparent changes which may take place in cells the amyloid infiltration or degeneration is certainly one of the most important. The treatment of this subject in the French edition lacks distinctness, and the translators have not seen fit to amend or add to this section. The brief consideration includes under this head not only the changes taking place as a pathological condition in the cells of tissues and organs, notably in cells of involuntary muscle, but also the corpora amylacea, which are almost universally regarded as wholly distinct from the amyloid material previously referred to. The no longer recent discovery of the use of methyl-aniline as an important means of recognizing the presence and limitation of amyloid degeneration is not alluded to. Although its use may be considered as not absolutely essential, the results obtained with it are so delicate and beautiful that this staining material necessarily forms one of the group of reagents which every worker in diseased tissues should have at his side.

In the consideration of fatty degeneration we are told that local death resulting from an arrest of the circulation is followed by a fatty degeneration of the elements. This idea has certainly long been held, but the recent papers of Weigert and Litten make such a statement no longer dogmatic. According to their investigations the immediate result is not a fatty degeneration, but a curdling of the contents of the cell, which produces the form of death called by Cohnheim necrosis from coagulation, the limits of which are already rapidly extended beyond the domain of infarction, and which seems destined to play a very important part in numerous pathological processes. Most observers would hardly agree with Cornil and Ranvier in considering the granular corpuscles found in softening of the brain, and the yellow patches in chronic degeneration of the aorta as the mere aggregation of fat granules. There is no mention of the possibility, to say nothing of the greater probability, of the former representing the result of a fatty degeneration of the cells of the neuroglia or of migrated leucocytes, and that the latter are usually looked upon as the result of a fatty degeneration of cells within the intima.

The statements with regard to the nature and structure of tumours naturally attract attention from the interest and importance of the subject. The basis of classification established by Virchow must necessarily be adhered to in the main, though occasional deviations appear which rather give the authors opportunity of differing as to certain details than of enabling them to establish essential differences. We had supposed the term glioma was used from the resemblance of this class of tumours to the neuroglia and the probability of the latter serving as a matrix. That either glioma or neuroglia were so called from a resemblance in consistency to glue has escaped our observation. The usual idea is that the cementing properties of glue are more directly suggested.

There seems to be no strong reason for retaining the term lymphadenoma as representing, either entire or in part, the lymphoma of Virchow. The latter word has the merit of brevity, and does not so directly suggest either a glandular origin or a glandular structure. In the tumour composed of lymphatic tissue the observer does not necessarily expect to find the structure of a lymphatic gland, but merely the arrangement of cells and fibre which exists not only in these glands but in the reticulated form of connective tissue.

The use of gummatous for gummous is occasionally met with, and is more likely to represent a slip of the pen than an intended deviation from the usual method of forming adjectives.

The classification and condensed description of tumours as obtained from Dr. Tyson's lectures is an excellent supplement to the section on the general subject. By making free use of the detailed statements preceding, a very satisfactory amount of information is obtained concerning the present standpoint of the diagnosis of tumours. The including of the group of endotheliomata among tumours is a convenience by the aid of which numerous growths previously regarded as cancerous, hence of epithelial origin, may be derived from the connective tissues although their structure resembles that of cancer.

Scarcely any chapter in the volume has needed so thorough a renovation as that concerning tubercle and tuberculosis. Ten years ago it seemed as if the structure of tubercle and its differential diagnosis from cellular, fibrous, and caseous material were well established. The results of experimental investigation in the minds of certain writers may be said to have taken away this foothold, and it is a very direct inference from the latest writings of a prominent authority, that the experimental is of far greater value than the structural diagnosis of tubercle. According to Cohnheim only that is tuberculous the inoculation of which in certain animals produces tubercle, and only those are tubercles which are thus produced. The translators have avoided the so-called advanced views, which frequently suggest the dreams of visionaries rather than the theories of naturalists, and have presented a carefully compiled statement which largely belongs under the head of accurate knowledge.

The section under fibroid degeneration of the heart, extracted from Green's "Introduction to Pathology and Morbid Anatomy," might have been advantageously modified by the translators. Although comparatively rare in the experience of this author the change is frequently met with by other observers, and as an interstitial myocarditis has long held a definite place in pathological anatomy. Its etiological importance in connection with aneurism of the heart, and its clinical significance as a cause of irregular action of this organ may be considered as already well known.

The researches of Litten, previously referred to in this review, may have come to the notice of the translators, when it was already too late to incorporate them in the statement with regard to the circulatory changes resulting from embolism. The extract from Green's book no longer represents an unquestioned view, and Cohnheim's explanation, which has been so generally and unhesitatingly accepted, seems destined to yield to a slight modification of the earlier observations of Virchow.

That there is an endarteritis at all characteristic of syphilis is an idea not to be entertained at present, and such a statement, though copied from another author, could readily have been so modified by the translators as to be in harmony with controlling observations. It is often better to know nothing than to know a thing wrong.

The changes occurring in the so-called organization of a thrombus are well presented, and Dr. Shakespeare is enabled to give the results of his own observations and historical study. These were originally offered, we believe, in an unpublished Warren-Prize Essay, but were more recently printed as a Toner Lecture. Although the general description is excellent, a prominent omission is to be noted in the absence of any reference to the recent article of Senftleben, which suggests so directly the importance of migratory cells in forming a considerable part of the granulation tissue projecting into the thrombus from the arterial intima. It is not to be forgotten, however, that during the progress of the translation, subjects regarded as finished may have been printed and laid aside sometime before the appearance of contradictory evidence.

Although there is abundant room for criticism in a volume which makes its appearance under the circumstances attending the preparation of this work, there is a far greater opportunity for unqualified praise. Most of the information given is of an exact nature, and although the interpretation in certain instances may be dissented from, the book as a whole undoubtedly represents the prolonged study of accurately trained observers. It may, indeed, be said to have gained in strength by the constant evidence of personal experience on the part of the writers.

The translation appears to have been accurately made and is very readable. As to the additions we can only say in general that they would have been of greater value had they all been as carefully compiled as that on tuberculosis rather than copied from any single author or text-book. Not the least among the valuable additions made by the translators are the numerous illustrations from Green's "Pathology and Morbid Anatomy," the "Medical and Surgical History of the War," Stricker's "Histology," and Gray's "Anatomy." Credit is not invariably given to Stricker and Gray for their work, an omission which is preferably to be charged against the printer.

Among the many excellent drawings those showing the skill of Dr. Woodward are certainly remarkably beautiful and instructive. Representing the results of photomicrography, they indicate a truthfulness to nature which is lacking to a greater or less extent in the necessarily somewhat diagrammatic drawings otherwise produced.

But few typographical errors are to be noticed, and these, in nearly all instances, represent the printer's difficulty in accurately producing the proper names of foreigners. Scwergger-Seidel, Ballinger, Vulpain, and Huebner retain enough of their originality for most readers to readily identify the persons concerned, although the names are somewhat distorted.

We have no hesitation in cordially recommending the English translation of Cornil and Ranvier's "Pathological Histology" as the best work of its kind in any language, and as giving to its readers a trustworthy guide in obtaining a broad and solid basis for the appreciation of the practical bearings of pathological anatomy. R. H. F.

ART. XXV.—*Paracentesis Pericardii.*

1. *Paracentesis of the Pericardium*; *a consideration of the Surgical Treatment of Pericardial Effusions.* By JOHN B. ROBERTS, A.M., M.D., Lecturer on Anatomy in the Philadelphia School of Anatomy, etc. 12mo. pp. 100. Philadelphia: J. B. Lippincott & Co., 1880.
2. *Ein Fall von Paracentesis Pericardii. Aus der medicinischen Klinik zu Freiburgi. B. Freiburger Dissertation.* Von Dr. C. HINDENLANG, Ersten Assistenzarzt der Klinik. *Deutches Archiv für klinische Medicin*, 1879. Bd. xxiv. Heft. 445, pp. 452–482

A Case of Paracentesis of the Pericardium; from the Medical Clinic of Freiburg. By Dr. C. HINDENLANG, Senior Assistant Surgeon to the Clinic, etc.

BY one of those coincidences not infrequent in medical literature, two important and rather elaborate articles on a subject which had heretofore attracted but occasional attention, have appeared almost simultaneously in Europe and America respectively. Both of them contain collections of all the reported cases accessible to their authors; and both of them are illustrated. The object held in view in the American monograph is more comprehensive than that of the essay in the *Deutsches Archiv*, comprising, as it does, a close study of the anatomical relations of the parts concerned in the operation, with a view of determining the points of safety in the surgical procedure itself, and the indications which render it injudicious or otherwise; while it presents an admirably written review of the causes of pericardial effusions, their character, symptoms, and treatment.

Proposed by Riolan in the earlier half of the seventeenth century, the first directions for the operation were, according to Hindenlang, laid down by Senac in 1724, although never performed by him. The first successful operation is accredited to Romero, of Barcelona, in 1819.

Hindenlang reports a recent case by Prof. Bäumler, the one which gave occasion to his essay, and an unpublished one of Prof. Kussmaul of Strassburg; following which, he presents brief records of fifty additional cases collected from various sources. He alludes, in a note, to an imperfect record of thirty additional cases of puncture for scorbutic pericarditis, which are not included in the main text. He follows his record with the remark that according to the collations given, the paracentesis of the pericardium was limited to a mere attempt in six instances, and was actually performed in sixty-five. Leaving eight of his seventy-three cases out of consideration because the operation was not completed, or the result remained doubtful or was unreported, he presents a record of twenty-one of the sixty-five punctures as successful, with more or less complete recovery, and forty-four cases unsuccessful, including the twenty-three for scorbutus not admitted into his detailed list. The awkward manner in which this writer commingles the statistics in his table of fifty cases with the imperfect records of the majority of punctures in scorbutus which are excluded from his table and relegated to a running foot-note, renders it rather perplexing to comprehend the manner in which he arrives at his concluding figures. We should deem it better to consider every puncture of the pericardium, whether in scorbutus or not, a case of paracentesis pericardii and deserving of admission into a statistic table of the procedure.

Roberts furnishes a table of sixty cases with twenty-four recoveries and thirty-six deaths.

Comparing the two records, we find that Roberts includes two cases of Kyber, two of Aran, and one each of Karawagen, Wilczkowski, Skoda, Teale, Herbert Norris, Labric, Chaillou, Duncan, Heath, Saundby, Gooch, Steele, J. Lewis Smith, Viry, Douglas, Porcher, and Comegys Paul,[1] which do not figure in the statistics of the German writer; while the latter includes a case of Dessault, in which a mistake was made,—the accumulation being an encapsuled pleuritic one, an uncertain operation by Larrey, and one positive operation each, by Vigla, Mader, and Gemell, which do not appear tabulated in the record of Roberts. He accredits to T. Clifford Allbutt, a case operated on by Teale; to Gemell, one operated on by Gairdner; to Frémy, one operated on by Ponroy, and already recorded in his table (case 32); and to Moore, one operated on by Gooch; it being probable that want of familiarity with French and English respectively has led him to mistake the reporter for the operator. This explanation will reconcile some apparent discrepancies in the two records. Adding nineteen cases accredited solely to Roberts' table, to the seventy-two (for the case of Ponroy and that of Frémy, in this list, is one and the same case) recorded in Hindenlang's, and the two new cases reported by the latter, we have a total of ninety-three, irrespective of some probable punctures in scorbutus which would swell the number to more than one hundred. The dates and data of the concordant statistics differ a little in the two compilations, owing to the sources of information from which they have been derived; those of German origin being accredited chiefly to original sources in the foreign record, and to the vernacular in the American one. Considerable labour must have been bestowed in looking up authorities and records on both sides of the ocean, and the results in themselves are valuable, though demonstrative of the impropriety of too implicit reliance on the outcomes of mere statistical inquiries.

A successful case of paracentesis of the pericardium in a child nine years of age, performed by Dr. G. M. Staples, of Dubuque, Iowa, June 7, 1877, seems not to have come under the notice of either essayist. In this case death took place from effusion into the brain, two years and six months after the operation, and the autopsy fully confirmed the diagnosis of pericardial effusion. The pericardium was universally adherent, and the heart enormously hypertrophied, weighing twenty ounces. The left auricle was greatly dilated, and its endocardium roughened and gritty. There was mitral insufficiency, with cartilaginous degeneration of the valve. There was no trace of the puncture. The pleuræ were healthy, save for two or three adhesions in the right side. Dr. Staples concluded that life might have been indefinitely prolonged, had the operation been performed earlier.[2]

Quite recently, too, a second operation has been published by Prof. F. P. Porcher,[3] of Charleston, S. C., in which the operation was performed with partial, yet decided, relief upon a female patient seventy years of age, then in the City Hospital, Charleston. Two drachms of fluid were withdrawn from the pericardial sac by means of the needle of the hypodermic syringe. Two attempts at repetition of the procedure on the day following failed to find effused fluid, a few drops of blood, only, appearing in the tube. The withdrawal of the two drachms of fluid, however, seems to have procured a great deal of improvement in her physical condition. This improvement is accounted for by Dr. Porcher, in accordance with Roberts' suggestions, by the supposition of internal drainage into the cavity of the thorax, and possibly subsequent absorption. In the case now mentioned, a return of dyspnœa occurred on the twenty-seventh day after the paracentesis, and ended fatally; the patient being at the time under the care of Dr. Porcher's successor in the hospital. At the autopsy, on the day following, several ounces of fluid were found in the pericardial sac.

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[1] Since published in the Philadelphia Medical Times, Dec. 6, 1879, p. 115.

[2] The Medical Record, N. Y., Feb. 21, 1880, p. 212.

[3] Louisville Medical News, Feb. 7, 1880, p. 62.

The first case reported by Hindenlang occurred in a male peasant twenty years of age. Without repeating the entire details, it may be stated that the affection seems to have been excited during the beginning of August, 1877, by drinking several glasses of cold beer on an empty stomach, while overheated. Abdominal colic occurred immediately, soon followed by diarrhœa. Rigors occurred at the same time, and were succeeded by increased temperature and sweating. The patient was able to work the next day, but only by dint of great effort. During the ensuing night, thoracic constriction and dyspnœa set in, frequently increasing to such a degree as to compel the sitting posture. About fourteen days later swelling began in the lower extremities, and gradually extended upon the abdomen. The condition of the patient became gradually worse; and on Oct. 26, 1877, he was brought to the hospital in a pitiful condition. The dyspnœa was very great, even when propped up in bed, and rendered speech difficult. The face was slightly cyanotic, the lips and nails quite blue. The inner surface of the upper part of the left thigh was quite œdematous, as was the tissue over the malleolus. The cervical veins were not very full, the external jugular alone being visible, a little distended, and becoming smaller on inspiration. The heartbeat was not visible, nor the slightest thrill to be felt on palpation. The respiration was markedly costal, orthopnœic, and 58 per minute. Pulse 124, irregular and compressible, and almost intermitted at each inspiration. Abdomen rather tense; epigastrium somewhat painful to pressure; no fluctuation discernible. Percussion: Clear at tops of lungs; absolute flatness over the entire sternum, broadening out below, and extending to the maxillary line in the left, and to the anterior axillary line on the right, abutting the line of hepatic flatness at the fifth intercostal space. Auscultation: Cardiac sounds clear, but weak and barely audible; the second pulmonic sound somewhat louder; no pericardial friction-sound audible. The symptoms continued to get worse; and, on Oct. 28th, an attempt was made by Prof. Bäumler to discharge the pericardial effusion with the needle of Dieulafoy's aspiratory apparatus. Three punctures were made unavailingly; and, as a trocar was not at hand, the punctures were protected with plaster, and covered with an ice-bag. On the following day, the patient's condition being still worse, the pericardium was again punctured—a delicate trocar, 1.5 mm. in thickness, being used. The puncture was made in the fifth intercostal space, 4 cm. outwards from the left edge of the sternum, and was about 5–6 cm. in depth. The stylet being removed, and the canule pushed somewhat further in, the aspiratory apparatus was attached, and 300 grammes withdrawn, of a dark-red thin fluid, containing considerable albumen, and but few flakes of fibrin. The grating of the heart against the canula was distinctly felt, and was especially strong towards the end of the operation. Examination of the fluid showed many well-preserved blood-corpuscles in the sediment, and others of stellate form. Fibrin was present in tube-like casts, or in hyaline membrane; the former in part empty and folded on themselves, and in part distended with coarse-grained fatty contents. There was also some fine-grained fibrin.

After the operation, the patient improved during an entire fortnight, when the symptoms again became worse and worse, so that a further puncture of the pericardium was made on Dec. 11th, the point of entrance being the same as before. After the trocar had overcome the first resistances of the intercostal space, it became very much inclined forwards, as though a thick membrane interposed. The movements of the heart against the canula were soon perceptible, and, on pushing the latter further in, after withdrawing the stylet, some drops of yellow serum flowed from it. When about 100 c.cm. of fluid had been withdrawn by aspiration, an inspiratory intermission of the pulse, which had existed for some time, became much less marked. After the removal of about 500 c.cm., the pulse was of the same frequency, and no longer completely compressed at each inspiration, though still diminished in volume. After the removal of 850 c.cm., the pressure on the rubber tube suddenly became very much reduced, and the grating of the heart against the canula was very perceptible. The canula was removed, and found on measurement to have been inserted to the depth of 4 cm. The fluid withdrawn was almost clear, yellowish in colour, with a tinge of green. Microscopic examination revealed many small and large fat globules, nucleated cells, fatty white blood-corpuscles, and variously stellated red blood-corpuscles. There were some cloudy masses of pigment, with numerous fat cells entangled in them.

The operation was followed by great relief. This time, too, as before, there was great increase in the excretion of urine.

Towards the end of the month the patient began to lose ground, and was discharged at his own request on March 26th of the following year. He gradually grew worse and worse, and died in the middle of June. There was no autopsy.

The second case occurred in a cabinet-maker, 21 years of age, with an hereditary predisposition to phthisis. Early in November, 1876, he was seized with pleurisy of the right side, for which paracentesis was performed Jan. 7, 1877; and on Jan. 11th he was admitted to the hospital at Strassburg under care of Prof. Kussmaul. The patient had great œdema of the lower half of the body, with ascites; and, in addition to a copious right-sided pleural exudation, a large pericardial effusion extending over both sides of the sternum above, along the second costal cartilage to the left axillary line. There was great dyspnœa, increasing to orthopnœa; and the pulse was small, irregular, and varying in frequence between 100 and 130. On Jan. 14th, Prof. Kussmaul punctured the thorax with Dieulafoy's apparatus. The needle was plunged into the fifth intercostal space of the right side, about 1.5 cm. to the outside of the mammillary line. At first, 20 c.cm. of clear serum was discharged. As the needle was pushed further around, a turbid brownish-red fluid flowed out at once, of which about 750 c.cm. were withdrawn. This fluid contained a great quantity of altered blood-corpuscles, but no normal fresh ones. The result of the operation was admirable. The excretion of urine increased from 600 c.cm. to 3000 c.cm. per diem. The two kinds of fluid withdrawn led Prof. Kussmaul to conclude that the first came from the pleura, the second from the pericardium.

On Jan. 18th, the operation was repeated, and in precisely the same manner, to see whether two varieties of fluid would be withdrawn. The needle was plunged in at the same point, and held in position as soon as the fluid flowed. In this manner about 550 c.cm. of clear serous fluid was discharged. Then the needle was advanced, and directed more towards the middle line to penetrate the distended pericardium. A clear red bloody serum flowed out, of which 250 c.cm. were discharged. It contained fresh normal blood-corpuscles. Great relief followed this operation likewise. By March, the œdema and ascites had disappeared; and on the 8th of May the patient was permitted to return to his home.

As to the method of operation, preference is given to aspiration as a matter of course in both essays. This method of operation is of such recent adoption that even Hayden, at the date of publication (1875) of his extensive treatise on diseases of the heart, was unaware of any instance in which the pneumatic aspirator had been used in the performance of this operation. He gives a table of eighteen operations in which the bistoury was the principal instrument used in eleven instances, and the trocar and canula in three.

The point of puncture, which is discussed in a few sentences by Hindenlang, who recommends the third, fourth, or fifth intercostal space, according to the extent of cardiac dulness, and at a point from three to four centimetres external to the left border of the sternum, is discussed in considerable detail by Dr. Roberts, who concludes that the best point, unless individual peculiarities render another preferable, will be in the fifth space, nearer the rib below than that above, and from two to two and a quarter inches to the left of the median line of the sternum. Dr. Roberts likewise gives minute directions as to the methods of operating, and choice and supervision of implements. He discusses the dangers to be encountered from untoward wounding of the internal mammary artery, or the substance of the heart itself. A few cases are instanced in which the cavity of the heart had been penetrated without giving rise to a fatal issue from that cause. Dr. Porcher, in the article above referred to, prefers to select the central point of dulness as the point of puncture, paying less regard to the anatomical relations of the parts, inasmuch as displacement may have occurred, as in his own second case.

In the absence of authoritative data, even in elaborate treatises on diseases of the heart, it is quite probable that the essays we have discussed will encourage physicians to enlist surgical aid in cases of pericardial effusion imperilling life, and that the operation of penetrating the pericardium will be approached with greater confidence than heretofore. Roberts' monograph in particular is well worthy of careful study. J. S. C.

ART. XXVI.—*Report on the Revision of the U. S. Pharmacopœia, preliminary to the Convention of* 1880. *Being a Rough Draft of the General Principles, Titles, and Working Formulæ proposed for the next Pharmacopœia.* Prepared and compiled by CHARLES RICE, Chairman of the Committee on the Revision of the U. S. Pharmacopœia of the American Pharmaceutical Association. 8vo. pp. xviii., 202. New York, 1880.

THE medical profession of our country, individually, and through their organized associations, have been singularly indifferent to their official standard of the Materia Medica—the U. S. Pharmacopœia. The very existence of such a work is unknown to many, and by others the Pharmacopœia is confounded with the U. S. Dispensatory of Wood and Bache. As the sixth decennial revision is now approaching, and as much of the preliminary work has already been done, it is an appropriate time to consider the relations of the profession to this national standard which is intended to be of national authority, not by virtue of Congressional Enactment, but by the moral force of the medical and pharmaceutical bodies.

Is a national standard of the Materia Medica desirable? To answer such a question would seem to be a labour of supererogation if it were not for the remarkable apathy exhibited by the medical profession. The experience of older communities and States has shown the necessity for a national standard, and as the intercourse between nations becomes more intimate, the need of an international, or universal Pharmacopœia, is strongly felt. Uniformity is desirable for convenience, to obtain greater accuracy and perfection in the processes, and to prevent mistakes. If every pharmaceutist had his own formulæ, if the preparations varied accordingly, if each physician prepared his own Pharmacopœia, the confusion would speedily become worse confounded. Indeed, it needs no argument to demonstrate that a standard is necessary, especially in a country like ours, the inhabitants made up of various nationalities, the centres of population in the different sections intermingling freely, but having diverse interests.

By whom shall the standard be prepared and regulated? In our country where all private interests, as far as possible, are committed to private hands, obviously those immediately concerned are the proper persons to be entrusted with the duty of preparing and regulating the Pharmacopœia. The sanction of the Government should, however, be given to the work, to make it of legal authority, not over all so-called physicians and pharmaceutists, but over the regular medical and pharmaceutical professions who are affected by its provisions, and are willing to conform to its requirements.

Of the members of the medical and pharmaceutical profession, to work under its provisions, who are to be selected to prepare the Pharmacopœia? A full discussion of this important point was carried on in 1877, chiefly by Drs. E. R. Squibb, of Brooklyn, and H. C. Wood, of Philadelphia. Two important innovations were proposed by Dr. Squibb—to place the revision of the Pharmacopœia under the charge and authority of the American Medical Association; to enlarge the scope of the work, so as to make it a complete exposition, not only of materia medica and pharmacy, but somewhat of therapeutics, so that it would consist of the Pharmacopœia and of commentaries such as those of a dispensatory. Passing over for the present the latter proposition, we take up for consideration the former. The American Medical Association acted wisely, we think, in declining the onerous task. There are few members of that body having the necessary qualifications for preparing such a work; hence it would have been necessary to devolve it on a Committee provided with funds and empowered to obtain needful help. The ability of a representative body of changing composition, to carry on such a work, to form a suitable committee and to collect the means, is more than doubtful. If a judgment may be formed of the capacity of such a body for the performance of such duties, from the results of similar undertakings, we may conclude that the American Medical Association is not the proper custodian of our national Pharmacopœia. As the work connected with it is largely technical and pharmaceutical, it is self-evident that those having the necessary technical knowledge are the proper bodies for its preparation. The medical bodies may rightly claim the privilege to indicate the articles which should form the list, the composition of compound remedies, and the strength of the various preparations. A convention for revising the Pharmacopœia, should be composed then, according to this view, of delegates from the medical and pharmaceutical organizations. Probably, the present arrangement is as well adapted to the purpose as any that could be desired, the convention being composed of delegates representing medical colleges, medical societies, colleges of pharmacy, and pharmaceutical associations and representatives from the medical corps of the Army and Navy. When the last convention met in Washington, May 4, 1870, a Committee on revision and publication, consisting of "fifteen members, including the President of the Convention as one" (Dr. Joseph Carson), was appointed. This Committee consisted of the following eminent men: Drs. Geo. B. Wood, John M. Maisch, Robert Bridges, of Philadelphia; Dr. W. Manlius Smith of New York, Albert E. Ebert of Chicago, J. Faris Moore of Baltimore, G. F. H. Markoe of Boston, Dr. John C. Riley of Washington, Dr. Thomas Jenkins of Louisville, Dr. Charles A. Lea of Buffalo, Dr. J. S. Welford of Richmond, Dr. F. Wentzell of San Francisco, Dr. W. S. W. Ruschenberger U. S. Army and Navy. The Committee met in

June of the same year, and continued its labours until the completion of the work. "In accordance with the resolution of the Convention," say the Committee in the preface to the Pharmacopœia, "the scope of the work has been extended rather than abridged, and it has been the desire of the Committee to adapt it to the wants of our extended country without losing sight of the conservative character necessarily pertaining to a National Pharmacopœia. Such a work must necessarily follow in the wake of advancing knowledge; it is no part of its mission to lead in the paths of discovery. It should gather up and hoard for use what has been determined to be positive improvement, without pandering to fashion or to doubtful novelties in Pharmaceutical Science."

The Committees carried out their revision strictly in accordance with these conservative principles. It is generally understood that the meagre conception of a Pharmacopœia, entertained by the Committee, was largely due to the overweening influence of the late distinguished Prof. Geo. B. Wood, whose remarkable Dispensatory had been the commentary on the Pharmacopœia for more than a generation. We do not believe that a question of self-interest had warped Dr. Wood's judgment. He had simply the wish to continue on in the way in which the work had begun, and according to methods which he had been largely instrumental in introducing. It is a part of the history of this Committee that many able pharmaceutists, amongst whom the eminent Dr. Squibb was one, would have gladly rendered important aid in the revision, if their opinions had been given any consideration. We will not review the controversy, which has since occurred, contenting ourselves with the remark that although the Pharmacopœia was improved, it contains many errors, and needs now the thorough revision of the new Committee, to be duly appointed by the Convention which meets in May, and the enlargement and improvement demanded by the progress in knowledge.

We have now before us the Report on the Revision of the U. S. Pharmacopœia, made to the American Pharmaceutical Association by Dr. Charles Rice, chairman of the Committee appointed for this purpose. It has been compiled by Dr. Rice "partly from the contributions or memoranda received from members of the Committee and other gentlemen who gave their aid, and partly from his own notes, either based on personal experience, or on the recorded statements of others." As Dr. Rice laboured under many disadvantages as to time and material, he very naturally does not wish his report to be regarded as complete, rather "as a printed manuscript, to be circulated among the members of the Committee, for scrutiny and correction; and at the same time to be submitted to the medical and pharmaceutical professions to invite further contributions to knowledge, and criticism, which may aid in attaining the object more completely."

We may, therefore, in accordance with the design of this publication, refer to some points of general professional interest—the more especially, since it is highly probable, we think, that this report will be the basis of the new Pharmacopœia. Under the head of "General principles recommended for adoption in the Revision of the U. S. Pharmacopœia," there are some very important considerations. It is proposed to continue to write the text in English, whilst the names of articles will be written in Latin and English. Here at the outset we meet with a term of almost universal use but which is manifestly erroneous—the term *officinal*, instead of *official*. It occurs in the first paragraph as follows: "the *officinal* substances and preparations," meaning those recognized as of official authority. On referring to Worcester's Dictionary we find that "official" is defined as follows: "Derived from the proper office, or officer, or from the proper authority; authoritative." "Officinal" is defined as "relating to, used, or sold in a shop, or place of business." By way of illustration we may say "Chloroform is 'official' in the U. S. Pharmacopœia, but Chlorodyne is 'officinal,' or found, or for sale in the shops." A substance may be officinal, but not official, that is, not recognized by the U. S. Pharmacopœia. We find on referring to Squire's "Companion," that he designates the articles of the materia medica as "official," or "non-official," instead of *officinal.*

We cordially agree with the propriety of the next general principle, that the distinction "Primary" and "Secondary List" be abolished, and all the articles retained be arranged in an alphabetical list. It is proposed, also, to add at the end of each article a short paragraph, giving the names of all the preparations into which the substance or preparation, treated of in the article, enters. This will facilitate materially the search for preparations of various kinds. It is, also, proposed to abandon measures of capacity, and to express quantities only in parts by weight, and when it is necessary to employ definite expressions of weight, to state them both in decimal and apothecaries weight. The general voice of the profession will, we think, approve of these recommendations.

To the tables now contained in the Pharmacopœia, it is proposed to add a "Table of largest single and daily doses of powerful remedies," a "Table of Solubilities of the *Officinal* Chemicals in Water and Alcohol," and a number of others, some of unquestionable utility, and some of doubtful value.

What are the proper limits of a Pharmacopœia? The opinions on this point differ. From the rather narrow conception of the late Dr. Wood, to the large views of Dr. Squibb, there is a wide space. Wood preferred a mere list of articles and preparations, the commentary being provided by his Dispensatory; Squibb would include an ample explanatory text. Whilst the report of Dr. Rice is much more full than the present Pharmacopœia, it does not include the detailed explanations of a Dispensatory. It is, on the whole, a successful attempt to occupy the middle ground. Successive editions of the Dispensatory of Wood and Bache, and the appearance of the able and elaborate volume of Stillé and Maisch, render it the less necessary to encumber our national standard with the multifarious details of an explanatory text.

In looking over the report of Dr. Rice, we are surprised at the number and variety of the excellent suggestions of reform. As it is desirable to awaken the profession from its somnolent condition on this subject, and to excite inquiry, we beg to call our readers' attention to some of these suggestions. Let us take up the remarks on page 3 about the opium preparations, *apropos of acetum opii.* It is proposed "to abolish the useless and perplexing differences in strength of the liquid opium preparations," and to make them all uniform, except paregoric, at 1 in 10, or 1 grain of opium to 10 grains of the preparations—for example, Acetum Opii, Tinct. Opii, Tinct. Opii Acetata, and Tinct. Opii Deodor., would all contain 1 grain of opium to 10 grains of the preparation. Amongst the acids it is proposed to add Acidum Aceticum Glaciale, A. Boracicum, A. Chrysophanicum, A. Hydrobromicum Dilutum, A. Oleicum, A. Phosphoricum Fortius, and A. Salicylicum. There can be no doubt of the necessity for the addition of these important remedies. Other additions proposed are, as we come to them in order—

Æther Aceticus, Amyl Nitris, Araroba (Goa powder), Balsamum Dipterocarpi (Gurjun Balsam), Baptisia, Benzinum, Bryonia, Caffeina, Calcii Bromidum, Calcii Iodidum, Calcii Sulphuretum, Camphora Monobromata, Cantharidinum, Chinoidinum, Chiretta, Chloral Butylicum, Codeia, Collodium Tiglii (Croton oil collodium), Coniæ Hydrobromas, Cotoinum, Elaterinum, various Elixirs, Eriodictyon, Erythroxylon, Eucalyptus, Extractum Ergotæ (Ergotin), a number of Extracta Fluida besides those now official, Glyceritum Amyli, Glyceritum Vitelli, Grindelia, Infusum Sennæ Compositum, Infusum Spigeliæ Compositum, Liquor Chloroformi Compositus (Chlorodyne), Liquor Ferri Dialysati, Lithii Benzoas, Lithii Bromidi, Lithii Salicylas, Magnesii Hypophosphis, Oleata—Oleatum Aconitiæ, O. Hydrargyri and O. Morphiæ, Pepsinum, Pepsinum Saccharatum, Physostigmiæ Salicylas, Pilocarpiæ Hydrochloras, Pilocarpus, Pulvis Cinchoniæ Compositus, Pulvis Glycyrrhizæ Compositus, Pulvis Morphiæ Compositus (Tully's powder), Quinidiæ Sulphas, Sodii Benzoas, Sodii Bromidum, Sodii Chloras, Sodii Iodidum, Sodii Salicylas, Sodii Sulpho-carbolas, Spiritus Odoratus (Cologne), Succus Belladonnæ, Succus Hyoscyami, Sumbul, Syrupus Calcii Lactophosphatis, Syrupus Calcis, Syrupus Ferri Bromidi, Syrupus Ferri Lactophosphatis, Syrupus Hypophosphitum Compositus, Syrupus Phosphatum Compositus, Syrupus Picis Liquidæ, Syrupus Stillingiæ Compositus, Thea, Thuja, Thymol, Thymus, Tilia, Tinctura Chirettæ, Tinct. Cimicifugæ, Tr. Erythroxyli, Tr. Eucalypti, Tr. Gelsemii, Tr. Grindeliæ, Tr. Guaranæ, Tr. Hydrastis, Tr. Persionis, Tr. Pilocarpi, Tr. Sumbul, Unguentum Acidi Chrysophanici, Viburnum Prunifolium, Vinum Aromaticum, Vinum Ferri Amarum, Vinum Ferri Citratis, Xanthoxyli Bacca, Zinci Bromidum, Zinci Iodidum, Zinci Nitras Fusa, Zinci Phosphidum, Zinci Sulphocarbolas.

In the main, the proposed additions are suitable. The old conservative spirit still lingers in the sphere of the Pharmacopœia, it is evident; for the changes are not radical, although numerous and important. The new nomenclature is barely mentioned. "Elegant Pharmacy" has received but slight recognition, and, we think, wisely so. We had hoped to see in this report an attempt at the simplification of formulæ, a diminution in the number of preparations of the same remedy, a lessening of the bulk and consequent elimination of the crudities in our preparations, a more extended utilization of active principles. Instead of concentration, we find that it is proposed to reduce the strength of the tincture of Aconite root, and of some other active tinctures. The particular need of the medical profession is a group of concentrated tinctures or fluid extracts that possess power in small bulk. As far as possible active principles should take the place of the lumbering tinctures and extracts of crude drugs. Pharmaceutists, influenced by a trade instinct, probably, seem disposed to adhere to bulky preparations, whilst it is to the interest of the medical profession to render their prescriptions as little disagreeable and as inexpensive as possible. But in any broad view of the interests of Pharmacy and Medicine, it must be evident that they harmonize and do not conflict; that methods injurious to the medical profession must ultimately react injuriously on the pharmaceutical. The permanent interests of both are based on due consideration of the rights and interests of the public. In our day the interests of all classes are inextricably interwoven, and hence one class cannot long profit at the expense of another, but each must find its highest good in a line of conduct beneficial to all—a sermon which has for its text, honesty is the best policy.

It is certainly true that the pharmaceutical profession desires to know what will be most conducive to the good of the medical profession. They prepare as we direct. They do more—they anticipate our needs, and make the difficult ways plain for us all to walk in. The laborious and unrequited labour of preparing the Pharmacopœia is performed by them, and we are asked simply to meet with them and indicate our wishes. Will the medical profession continue to be indifferent, or will they come forward and lend a helping hand to the sixth decennial revision?

R. B.

Art. XXVII.—*St. George's Hospital Reports.* Edited by William Howship Dickinson, M.D., F.R.C.P., and Thomas Pickering Pick, F.R.C.S. Vol. IX., 1877–8. 8vo. pp. xiv., 815. London: J. & A. Churchill, 1879.

The present volume is, we are told in the preface, the first of a New Series of these Reports, which have been intermitted for a year, but which the editors hope in future to issue annually on the 1st of October. Greater prominence is given in it than in its predecessors to the summaries of hospital practice, prepared by the Medical and Surgical Registrars. These are given the place of honour at the beginning of the volume, instead of being printed at the end of it as heretofore. During the two years covered by these reports 3145 patients were treated in the medical wards of the hospital, of whom 1763 were males and 1382 females. The diseases for which they were admitted were, of course, of every variety. Among them were 75 cases of acute lobar pneumonia, with 9 deaths; 75 cases of enteric fever, with 20 deaths; 49 cases of chorea, almost all ending in recovery or great improvement; and 10 cases of aneurism, all terminating fatally. In addition to these there was a large number of cases of valvular disease of the heart, of phthisis, and rheumatism; the leading symptoms of the cases, as well as their treatment, being generally presented in the tabular form. A table is also introduced showing the results of the treatment of rheumatism by the various methods now in vogue. From this it appears that salicylic acid is most useful in the acute forms of the disease, especially when high temperature is a prominent symptom, and that the results obtained from its use were better than those from any other drug. In chronic cases, as in the subacute variety, very little good seems to have been effected by it.

The *Report of the Post-mortem Department for the Year* 1877, by the Curator, Mr. William Ewart, contains an analysis of the 302 autopsies made during the year. Among them will be found many cases of interest, such as cases of ulcerative endocarditis, hydatids of the liver, Hodgkin's disease, pyæmia, cancer of the spleen, intestinal obstruction, tubercular meningitis, abscess and tumour of the brain, and cancer of the thyroid.

The *Report of the Obstetrical Department* for 1877 is by Mr. Harper, and that for 1878 by Dr. Blake. These gentlemen report in full five cases of Ovariotomy, three of which terminated fatally, as well as a number of other cases. The whole number of patients treated in this department is not given.

Mr. T. Whipham, in his *Notes from the Department for the Treatment of Diseases of the Throat*, has arranged the cases of the more usual forms of throat disease in tables, so that they may be conveniently studied; while he has given in detail the histories of cases of greater rarity. Among the latter will be found five cases in which the throat affection was apparently connected with the inhalation of sewer gas, and one case of bilateral paralysis of the abductors of the vocal cords.

The success which has attended its use in the treatment of rheumatism induced Dr. A. W. BARCLAY to prescribe *Salicylic Acid in Cases of Gout.* The eight cases chosen for his experiment were of ordinary severity, and uncomplicated by renal disease. In all of them marked subsidence of the symptoms followed the administration of the drug in the course of a few days, but to bring about this result it was necessary to give it in doses sufficient to produce salicism. In some of the cases the improvement was, however, only temporary, and before convalescence was fully established it was necessary to have recourse to colchicum and other medicines. Dr. Barclay, therefore, regards it as inferior to colchicum in its control over this disease, but thinks that, since occasionally patients are met with, who, in consequence of long-continued use of the latter remedy, have lost their susceptibility to it, it is well to have an alternative mode of treatment. He prefers the salicylate of soda to salicylic acid or its other salts.

The patient who was the subject of Mr. THOMAS P. PICK'S *Clinical Lecture on a Case of Enchondromatous Tumour of the Brain*, was a man, aged 22 years, who was originally admitted into the hospital, suffering from a tumour of the head of the tibia, for which amputation of the thigh was performed. On microscopic examination the tumour was found to consist of enchondroma, associated with sarcoma. The patient made a good recovery, but in less than five months after the operation had a fit, which was followed by loss of power on the right side, without loss of sensation, and an inability to articulate his words properly—symptoms which caused him again to apply for admission to the hospital. Headache, more or less violent, was present during a portion of the time he was under treatment, but was by no means a constant symptom. There was a slight improvement at first, but it was only temporary, the patient gradually becoming completely paralyzed, and only able to articulate the word "No," which he answered to every question. He died on the 29th day after admission, or about one month and a half after the onset of cerebral symptoms. The fact that the patient had previously had a tumour made the diagnosis of the nature of the lesion in the brain comparatively easy, Mr. Pick being able, by a careful consideration of the symptoms, to correctly indicate to his class the part of the brain in which the tumour would be found. At the autopsy the tumour, which was about the size of a walnut, was found to be situated in the outer side of the anterior part of the left corpus striatum, and between it and that part of the surface of the brain which is known as the third frontal convolution, partially involving both these parts. The reason for the rapid growth of the tumour in this case was the fact that the enchondroma was associated with sarcoma.

In an *Abstract of a Case of Diabetes*, Dr. JOHN CAVAFY illustrates the effects of the different remedies which were used in its treatment by means of charts and tables. Decidedly the best results were obtained from codeia, which was prescribed in very large doses; as much as from ten to sixteen grains being given daily. The latter amount appeared to give rise to drowsiness, and the use of the drug was, therefore, discontinued. With this exception no bad effects could be traced to its administration. The patient himself declared that he felt better while taking it. Good results were also obtained from the employment of ergot, Calabar bean, and salicylate of soda, but the last-named drug could not be given in full doses, owing to the ready susceptibility of the patient, and consequent early development of toxic symptoms. The patient's temperature was carefully noted—both morning and evening—during almost the whole of his stay in the hospital.

It was frequently subnormal, being on one occasion as low as 94·6°, and on another 95°. The highest temperature recorded was 100·6°. No constant relation could be traced between the temperature and the amount of urine passed; a rise being sometimes accompanied by an increase, but frequently also by a diminution in its quantity.

Mr. HERBERT WATNEY reports *Some Cases of Mitral Disease without Murmur*, which have come at different times under his observation. In some of these a murmur would appear to have been present at one time, and to have disappeared with the subsequent progress of the case. In the others there is no record of a murmur ever having been heard. In but one of the cases was there a post-mortem examination, and in this the lesions of the mitral valve do not seem to have been of a grave character. The signs which, in the absence of a murmur, Mr. Watney regards as most indicative of mitral disease, are—1. Feebleness of the pulse at the wrist, with a difference between the number of heart-beats and the pulse-waves. 2. Absence or diminution of the first sound of the heart. Drs. Balfour, Hilton Fagge, Rosenstein, and others, have all observed and called attention to similar cases.

Dr. WILLIAM OGLE contributes to the volume some *Observations on Outbreaks of Diphtheria in Rural Districts*, which he made while holding the position of Medical Officer of Health in a large country district. He takes the ground that in a large proportion of cases of diphtheria there is no visible diphtheritic membrane whatever from the beginning to the end of the attack, and that in this form the disease is as contagious as in the more usual form. In regard to the contagiousness of the disease, he entertains no doubt, but says that a longer exposure to the contagium is necessary to produce the disease than in the case of the other zymotic diseases. Thus those who only casually come in contact with the sick rarely take the disease. On the other hand, it spreads rapidly among those who occupy the same room; and it therefore not infrequently happens that a school or church is the channel for its dissemination. He has seen cases which have led him to believe that the contagium of the disease adheres to persons who have been affected for a long time after they have apparently recovered. In one case which he cites, a local epidemic of diphtheria occurred upon the return of a child to school ten weeks after his apparent recovery. He also refers to a case in which the contagium adhered to a house for many months after the original outbreak of the disease, and after the hygienic defect, which appears to have been its cause, had been remedied.

An attack of diphtheria confers, Dr. Ogle thinks, a certain degree of immunity from further attacks, lasting for a year, or sometimes for a longer time, but eventually wearing out. The susceptibility to the contagium he has found, in common with other observers, to be greatest between the ages of three and twelve, and to be greater in females than in males. The mortality of the disease in the epidemics which came under his observation was 13 per cent. It was slightly larger in males than in females. In his experience the diseases which have prevailed with the greatest frequency at the same time with epidemics of diphtheria are croup, scarlet fever, erysipelas, and mumps. He has been unable to detect any distinct influence exercised on this disease by season, altitude, or soil, and is unable to give any positive opinion as regards the influence of filth, either in generating or fostering it. He is inclined to believe, however, that under certain, as yet unknown, conditions the diphtheritic poison may be generated *de novo* out of filth.

In eleven cases in which the time of exposure to the contagium was more or less definitely ascertained, the period of incubation of the disease varied from a single day to seven days. Judging from these cases it would seem to be shorter in children than in adults. Dr. Ogle refers to one case in which the contagium appeared to lie dormant for nearly a month, during the whole of which the patient suffered from sore-throat, which confined her to the house. Suddenly fresh symptoms developed themselves; the tonsils and pharynx became covered with false membrane; and two days after this occurrence two more of the children in the same house were similarly attacked, and a few days later a third.

Dr. E. L. Fox refers, in his *Notes on some Forms of Intestinal Obstructions*, to two cases of twisting of the bowels, in which relief occurred upon changing the position of the patient. In one case the patient, a lady, was tied on to a light sofa, and so raised, sofa and all, feet upwards, whilst her maid was directed gently but firmly to knead the bowels. In the other case the patient was allowed to fall on the floor with some violence by his two nurses, who were attempting to lift him from a sofa to his bed. He therefore believes that change of posture should always be tried in cases in which there is reason to believe that the seat of lesion is not bound down by inflammatory products. Cancer of the bowel may generally be suspected, he says, rather than any other form of disease giving rise to obstruction, when with some impediment to the passage of solid food, lasting for many months, there is a troublesome diarrhœa. This diarrhœa he believes to be due to gradual pressure on the veins.

In a paper *On Ichthyosis* Mr. GEORGE GASKOIN gives an epitome of fifty cases of the disease, reserving for some future occasion the histories of fifty other cases; an unusual number, certainly, to come under the personal observation of one man. Many of his cases appear to have occurred in young subjects, many are of slight character, but they all go beyond mere xeroderma. The frequency with which the disease is complicated with eczema is commented on by the author. We commend the paper to those specially interested in dermatology.

We shall let Mr. WYNDHAM COTTLE give the results of his experience with *Chrysophanic Acid*, in the treatment of various forms of skin disease, in his own words. "In ringworm, in pityriasis versicolor, and in acne," he says, "it offers no advantages over the ordinary methods of treatment. In eczema it is rarely of service, and may possibly cause trouble. It is especially useful in cases of the psoriasis class, in which action is in abeyance, and will often clean the skin of the eruption when other measures have failed." Disadvantages attending its use are the facts that it often produces erythema in the parts adjacent to the eruption, and stains the nails, hair, and clothing of a brownish-purple colour. It may also occasionally cause conjunctival irritation by being carried to the eyes of the patient by his hands. Its best solvents are the petroleum derivatives. It should never be employed to the exclusion of constitutional treatment.

Mr. WYNDHAM COTTLE is also the author of a paper on *Warty Growths*, which, as it is of more interest to the specialist than the general practitioner, we shall not attempt to analyze, but shall content ourselves with laying before our readers the general propositions with which it concludes. 1. Warts chiefly occur in ill-nourished and anæmic subjects. 2. They are contagious under certain conditions. 3. When situated on a markedly vascular base, they may evince a tendency to increase rapidly. 4. In such conditions of activity their complete removal or destruction is advisable. 5. The syphilitic nature of certain warts must be distinguished. 6. Troublesome hemorrhage sometimes attends the removal of warty growths by excision, etc. Warts are contagious under the following circumstances: When such a growth occurs, where the position of parts causes it to be kept moist and in a state of irritated activity, the discharge from it may give rise to similar growths on the contiguous skin or mucous surfaces, as on the prepuce, vulva, or anus. In this way non-specific warts may be communicated from a husband to a wife, or *vice versâ*. "Such infection is analogous," in the author's opinion, "to the eczematous discharge from an infant's head, setting up a similar rash on the nurse's arm, or when a husband communicates eczema about the genitals to his wife." This paper is illustrated by a handsome lithographic plate.

The symptoms in the case which S. WILSON HOPE reports, in his *History of an Illness*, were chiefly referable to morbid conditions of the nervous system, uterus, and rectum. It possesses many points of interest; but it would be impossible within the limits allowed us to transfer to these pages a satisfactory account of it, and we must therefore dismiss it with this brief notice.

The principal interest in Dr. W. B. CHEADLE'S paper, on *Exophthalmic Goitre*, will, we think, be found to lie in his account of the microscopic examination of the spinal cord and cervical sympathetic ganglia, derived from a fatal case of the disease. This we shall reproduce in his own words: "In the upper portion [of the medulla], close to the pons," he says, "the groups of caudate cells were generally clear, full, and of well-marked contour. In the group of cells below the floor of the fourth ventricle, from which fibres can be traced into the seventh nerve, however, one or two caudate cells were seen shrivelled and atrophied; but the ganglionic cells were normal, and the nerve tubes of the white matter were natural. The most striking change, in this region of nerve nuclei, was in the vessels, which were uniformly dilated in a remarkable degree far beyond the calibre of vessels in the same region in the normal cord. Similar changes were visible in the numerous vessels which run between the folds of gray matter in the corpus dentatum. A little lower down the medulla, in the region of the eighth and ninth nerves, the same dilatation of the vessels was conspicuous, and it was equally or more marked in the vessels in the corpus dentatum. Here and there, where the vessels had fallen out in the cutting, the vascular spaces were seen to be larger than normal; but there was no erosion, no *débris* of degenerated nerve tissue. At certain points it seemed as if the wide vessels must exercise injurious pressure upon the nerve tissue, with which they were in close contact; but no degeneration or atrophy could be made out, except, perhaps, in the few shrunken cells of the sections from the higher plane first mentioned. Throughout the cervical region of the cord this dilatation of the vessels was as conspicuous as in the medulla. This condition existed with little variation down to the dorsal region. No other morbid change could be found in the medulla and spinal cord."

"Thin sections were made from each of the ganglia [of the cervical sympathetic] on both sides; but they disclosed nothing abnormal. The ganglionic cells were healthy, and the nerve fibres unaffected in any way."

Of the fifteen cases of exophthalmic goitre which have come under Dr.

Cheadle's care, the result was not ascertained in three; of the remaining twelve two proved fatal, and ten ended in recovery, giving a mortality of one in six. "There is," the author says, "a general tendency to slow and gradual recovery, extending over a period of from one to three or four years, but usually complete in the end; the danger lying in exhaustion from extreme vomiting and diarrhœa. With a single exception the patients were women."

More important than medicines in the treatment of this disease is "the preservation of the most absolute and complete physical and mental rest." For the control of palpitations, diarrhœa, and vomiting the author recommends digitalis and a combination of opium and tannic acid. He regards exophthalmic goitre as a distinct neurosis, in which, while the sympathetic is largely involved, the chief centre of morbid action must lie in the upper portion of the spinal cord or the medulla oblongata—a view which the reader will find maintained in two previous papers by the same author in former volumes of these reports.[1] J. H. H.

This volume, though bulky, does not contain many papers of general surgical interest. There are fourteen articles, it is true, on surgical subjects, but of them nine are reports of the different departments of the hospital; thus we have two reports of the Surgical Registrar, three of the Ophthalmic Department, and reports of the Orthopædic, Aural, and Dental Departments. These make up the main portion of the book, and are supplemented by five papers on special subjects. The volume must, therefore, be said to have a personal interest to the staff and friends of St. George's Hospital rather than to possess any great merit in the eyes of the professional public. The statistics detailed in the annual reports are of value, but do not contain much of general interest. This criticism will perhaps apply to many yearly volumes issued by wealthy hospital corporations. The active workers and writers of the staff do not care to wait a year for the publication of their investigations, merely to have them buried in a volume of limited circulation, when they can obtain for them prompt publication in medical journals of large circulation. Hence a few hurriedly written articles, and a great deal of statistical padding, are frequently found within the covers of such books.

Careful investigation of the contents of the volume before us discloses some practical material that may be instructive. It will be proper to discuss first the Reports, and then the Monographs on special subjects. The *Report of the Surgical Registrar* states that the use of solution of sodium bicarbonate for the relief of pain after scalds has been attended with disappointment (p. 236). A curious instance of fracture of a previously unrecognized exostosis of the femur is recorded, though the subsequent history of the patient is unknown, since he left the hospital at the expiration of one day. In a case of stricture of the great intestine, lumbar colotomy was performed in the left loin, but it was found that the obstruction was higher up, towards the splenic flexure, and hence the operation was repeated upon the right side. The patient died on the fourth day, and an autopsy disclosed a thin fibrous band encircling the gut (p. 269). As no disease had been found by rectal examination, abdominal section, with antiseptic precautions, would seem to have been preferable to double colotomy; but, of course, the existence of the fibrous nature of the constriction could not have been determined beforehand. Two cases of excision of the lower end of the rectum are mentioned; and it is further stated that in rectal cancer, with bleeding and rapid emaciation, much benefit accrued from the continued use in full doses of chloride of iron. Considerable stress is laid upon this palliative method of treatment, and illustrative cases are cited.

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[1] See numbers of this Journal for July, 1870, and July, 1875.

A new method of dealing with internal hemorrhoids was tried by Mr. POLLOCK in several cases with success. The hemorrhoidal tumour was seized with a serrated clamp, half an inch wide at the inner edges; this was then screwed up until the pedicle was completely crushed. The bulk of the tumour was subsequently excised, without the occurrence of hemorrhage. This method does not strike the writer as being preferable to the clamp and cautery recommended by Mr. Smith, of London.

The *Reports of the Ophthalmic Department* show that iridectomy in interstitial keratitis has been productive of good results. Indeed, this operative procedure seems to be a favourite both for therapeutic and optical reasons, and more often resorted to for the former purpose than is usual in the hospitals of this city. A full account is given of M'Hardy's case of extraction of a piece of steel from the globe by the electro-magnet. Cataract extractions are performed with iridectomy to the exclusion of Liebreich's method. Compound hypermetropic astigmatism was usually corrected by giving a plus spherical lens for the higher meridian, combined with a minus cylinder for the lower, because better results were obtained than by giving a plus spherical for the lower meridian, and adding a plus cylinder for the higher one. In a total of 214 cases of defective refraction, only 11 of astigmatism are recorded. This is due, it is said, to the fact that only those to whom it was deemed worth while to give cylindrical glasses are included in the list of astigmatic patients. If considerable experience is a true guide, the present writer would rather attribute this small number of cases to the hurried, or perhaps careless, examination of the dispensary room. The folly of attempting to correct ametropic conditions without atropia or duboisia is illustrated by some cases of simulated myopia, in which hypermetropia was the true condition.

In this portion of the book, as well as in one or two other places, the use of awkward words, coined for the occasion, is to be deprecated; and tends to call back the spirit of Dr. Johnson to mete out retributive justice to the unlucky author. Could anything be worse than to say the patient had the left eye needled, and then sucked? (p. 484). If patients are to be iridectomized and Politzerized for diseases of the eye and ear, we shall soon have others cystotomized or Bigelowized for vesical calculus, Sayre-ized for vertebral caries, and Sims-ized for biliary obstruction. This is imitating too closely our German brethren, who have, we believe, already added a verb derived from Mr. Lister's name to their polysyllabic dictionary.

The occurrence of temporary deafness, as a sequel to the administration of salicylic acid in acute rheumatism, is referred to as occurring in several patients (p. 622); but this agent is believed to be unlike quinia, which at times, it is stated, leaves a permanent deafness.

In the Dental Department seven cases of continued hemorrhage after extraction were observed, which were successfully treated by the application of strong solutions of chloride of iron. Tonic spasm of the masseter muscles, due to impacted wisdom teeth, was cured by removal of the exciting cause.

Of the original papers the best are that on *The Results of the Treatment of Compound Fracture of the Leg in this Hospital, with special reference to Lister's Antiseptic Method*, by Mr. HOLMES, and that by Mr. MORGAN on *The Opening and Drainage of Joints*. Mr. Holmes gives a very dispassionate discussion of his subject, and speaks as follows:—

> "I have formed a strong general impression that the antiseptic is superior to the other methods; at any rate, during the dangerous period which follows the injury, in which the occurrence of surgical fever is so common under ordinary treatment, and during which erysipelas, diffuse inflammation, sloughing, extensive suppuration, and general blood-poisoning are also common. I have also a strong impression that it is not desirable to prolong the antiseptic treatment beyond this first period, which I would roughly estimate at about three weeks, since the carbolic acid and the heat of the dressings seem, after a time, to irritate the parts and retard healing." (p. 655.)

Again he says (p. 661):—

> "I believe that there are cases of compound fracture in which other methods are preferable."

These he mentions subsequently, as cases where there is obstinate oozing, or where delirium or some such complication renders difficult the proper application of a complicated dressing.

The paper on *Drainage of Joints* is written by a more partial admirer of Lister's antiseptic dressing. A table is given of eighteen cases, collected from literature; in which the knee-joint was opened antiseptically; in all but one for removal of loose cartilages. The results were universally good, but the author does not say whether the cases, which he tabulates, were picked cases. The article contains, however, some suggestions which furnish texts for surgical reflection.

The *Novel Method of Reducing Dislocation of the Shoulder*, by Mr. J. JONES, needs little criticism, as the author has, we believe, published it previously, and as it is merely a method of applying extension.

The post-mortem appearances described in the *Report on Cases of Tetanus*, by Mr. E. C. STIRLING, are interesting; but, as the author truly states, were probably the result rather than the cause of the tetanic phenomena.

The *Case of Tympanic Abscess*, by Dr. E. C. BABER, is a lengthy account of what was diagnosticated to be an interlamellar abscess of the membrana tympani. This rare affection deserves more attention than is usually bestowed upon it in the text-books of aural surgery. The treatment by paracentesis was followed by recovery. The author very properly insists upon that which would appear to be self-evident, but which is not recognized by the general profession—the necessity of ocular examination of the membrane of the tympanum in all cases of pain in the ear. He who ventured to treat a case of fracture of the arm without removing the patient's clothing, would be called a charlatan; and yet patients with aural and ophthalmic diseases are frequently treated by those who are too negligent to look into the organ affected. J. B. R.

Art. XXVIII.—*The Student's Guide to Diseases of the Eye.* By Edward Nettleship, F.R.C.S., Ophthalmic Surgeon to St. Thomas's Hospital. 12mo. pp. 369. Philadelphia: H. C. Lea, 1880.

The aim of this little book, the preface tells us, is "to supply students with the information they most need on diseases of the eye during their hospital course." The author is to be congratulated upon the very successful manner in which he has performed his task; he has succeeded in being concise without sacrificing clearness, and including the whole ground covered by more voluminous text-books, has given an excellent *resumé* of all the practical information they contain. The student will find facts without histories and conclusions without discussions—all that he really needs to enable him to make good use of his clinical opportunities and to prepare him for wider studies in times of greater leisure.

The book is divided into three parts.

Part I. treats of the interpretation of prominent symptoms, the external examination of the eyes, and the use of oblique illumination and the ophthalmoscope.

Part II., the clinical division, gives short, but sufficiently full, descriptions of all the diseases of the eye and its appendages, and their medical and operative treatment, and has a chapter on the Errors of Refraction and Accommodation.

Part III. is on Diseases of the Eye in relation to general diseases.

Perhaps the least satisfactory part of the book is that relating to refraction and accommodation. The subject is, to be sure, a most difficult one to condense, and one in which, after all, no degree of proficiency can be attained without special opportunities and actual clinical work, so that nothing more should be expected in a work like the present than a clear exposition of general principles. The author has, however, sometimes failed even in this. The following sentence, on page 31, contains an error that will prove very puzzling to the student, by confusing the visual angle with the angle of divergence: "Thus, No. 1½ of Snellen's types is read at 5″ (p.) and at 18″ (r.); in the latter position it is seen under an angle of 5 minutes, *i. e.*, *without effort of accommodation*, and may be considered as infinitely distant." The visual angle of 5 minutes at 18″ from the eye has nothing to do with the accommodation, but is determined by the size of the letters: letters half the size of 1½ Snellen are seen under an angle of 5 minutes at 9″. Rays of light coming from an object 18 inches distant from the eye are perceptibly divergent, and can be focused on the retina only by the use of an accommodation of $\frac{1}{18}$. This is easily proved, if proof were necessary for so simple a proposition, by placing the eye under the effects of atropia and noting how much of 1½ S. can then be read at 18″ "without effort of accommodation." The statement that an emmetropic eye "ceases to be emmetropic when accommodating for a near object," is also likely to be confusing. An emmetropic eye is one whose retina is situated at the principal focus of the dioptric media, and which, therefore, when in a state of rest, forms sharp images of distant objects. It is a correctly-shaped eye. It also forms sharp images of near objects when the proper degree of accommodation is used, but its shape is not altered; it is still emmetropic. These points may seem trivial, but those who are accustomed to teach students will recognize in them just such points as give most trouble to beginners.

In the treatment of presbyopia, the glasses recommended by the author are much too strong. A person 45 years of age, whose eyes are emmetropic, and who has hitherto, though with some inconvenience, been reading without glasses, is likely to be seriously annoyed, and may suffer some injury, by commencing at once with + 36. So sudden and decided an interference with the relation of convergence and accommodation is liable to be followed by a feeling of strain in the external muscles or even by congestion and lachrymation. The patient, at best, is soon rendered unnecessarily dependent upon his glasses, and some authors have thought that, by suspending too much of the accommodation, these strong glasses cause an unnaturally rapid increase of the presbyopia. Attention was called to these facts more than thirty years ago by Sichel. Opticians nearly always make the mistake of recommending too high a power, because the effect on first trial is seductively pleasant. After some hours of reading, however, it is a relief to take off the glasses and rub the eyes. Donders' table commences with 48 years of age and a glass of + 60, but, as most persons who use the eyes constantly need glasses earlier, + 72 is usually strong enough to commence with. It is a question if even a weaker glass will not suffice in many cases. Of course, it would be a most unscientific proceeding to order presbyopic glasses arbitrarily according to age, and the above remarks refer only to cases of emmetropia with normal sensitiveness of retina and good health. At about 55 or 60, acquired hypermetropia usually commences and must be considered with various other modifying circumstances.

One of the best chapters in the book is that on diseases of the eye in relation to general diseases, which will be found most valuable to practitioners as well as to students.

The illustrations are numerous and excellent, and the work of the publisher leaves nothing to be desired. We do not hesitate to pronounce Mr. Nettleship's book the best manual on ophthalmic surgery for the use of students and "busy practitioners" with which we are acquainted.

G. C. H.

ART. XXIX.—*Pseudo-Hypertrophic Muscular Paralysis; A Clinical Lecture.* By W. R. GOWERS, M.D., M.R.C.P., Assistant Professor of Clinical Medicine in University College, etc. 8vo. pp. vii., 66. London: J. & A. Churchill, 1879.

THIS monograph, built up from clinical experience and extensive bibliographic research, is a valuable contribution to neurological literature. Pseudo-hypertrophic muscular paralysis is a clinical type which has not been worn threadbare by writers, and Dr. Gowers's ability and opportunities especially fit him to discuss the subject clearly and comprehensively. Case after case is graphically described, special symptoms and manifestations being detailed with care and skill. Altogether 220 cases were analyzed in the preparation of the book, 44 of these being original. It is a striking fact that of the total of 220 cases 190 were males and 30 females. Heredity is an important element, the inheritance being in the vast proportion of cases from the side of the mother. The disease is usually one of early life.

The name pseudo-*hypertrophic* must not be allowed to mislead. *De-*

crease in the size of some muscles, as well as increase in that of others, is usually present; very rare, indeed, is the case figured by Duchenne, in which every muscle in the body was enlarged. The calf muscles are those which most uniformly show increase. The latissimus dorsi and lower portion of the pectoralis major are commonly much wasted. The peculiar attitude and gait, the lumbar lordosis, the process of "climbing up the thighs," the distortions of the body, the mottling of the skin, the tendon-reflexes are among the points in symptomatology happily and thoroughly presented.

A plate is given showing a section of gastrocnemius muscle, and also of a myo-lipoma of the spinal cord in a case in which the author made a necropsy. The gastrocnemius, both on gross and microscopical examination, had a striking resemblance to a fatty tumour. Narrow bands of fibrous tissue and muscular fibre passed among the fat cells. The muscular fibres themselves, as a rule, presented no granular degeneration, a point of considerable importance. Many were reduced in size, some considerably. The condition found corresponded closely with that observed by Cohnheim and Charcot, and also with the investigations made with Duchenne's histological harpoon. In connection with the remarks on this instrument, however, an important practical note is made in regard to the fallacy which may arise from the fact that the minute fragment removed, in one instance, may contain little fibrous tissue and much fat, and in another, the reverse, and yet nothing definite be established by the examinations. The conclusion to which Gowers arrives is, that the change in the muscles is primarily interstitial—a growth of nucleated fibrous tissue and of fat cells. He opposes the view of an actual hypertrophy of muscular fibres in the early stages. He believes that the muscular tissue, from pressure and other causes, suffers secondarily. The myo-lipoma referred to was a curious specimen. It was a small, fatty tumour attached to the conus medullaris of the spinal cord, and is worthy of special notice here, because of the view advanced. It contained striated muscular fibres and connective tissue; it had, indeed, precisely the aspect of a portion of muscle from a case of pseudo-hypertrophic paralysis, and, according to Gowers, was the result of the same congenital perverted tendency of development which gives rise to the wide-spread changes in muscular tissue.

The spinal cord of one patient was examined by Drs. Lockhart Clarke and Gowers. The most striking fact discovered by them was, with but slight exception, the conspicuously healthy state of the anterior cornua, this being in contrast with the condition in spinal infantile paralysis, and in most cases of progressive muscular atrophy in adults. Widely disseminated degenerations were found throughout the cord, but these were looked upon as secondary and accidental. The observations of others are reviewed. Dr. Meryon and Mr. Savory could find no change in the cord. Kesteven noted minute scattered spots of granular degeneration, and the very common empty spaces around vessels. Cohnheim, Charcot, Brieger, Bay, and Schultze detected nothing, except that Bay observed a slight increase of tissue in the lateral columns. Barth and Müller, however, in two doubtful adult cases discovered extensive changes. A curious case reported by Hitzig is mentioned, in which a condition of the muscles similar to that present in pseudo-hypertrophic paralysis came on after injury to the nerves of the arms. In one case slight degenerations were found by Brigidi in the sympathetic nerves, but Cohnheim could detect nothing of the kind in another. The hypothesis of an affection of "trophic nerves" also meets with no favour. Gowers's conclusions are that pseudo-hypertrophic paralysis of early life is not a disease of the spinal cord, or of the sympathetic system, or of trophic nerves; but he inclines to the theory of Friedreich, that it is a primary disease of the muscular tissue, "a congenital nutritive and formative weakness of the striated muscle substance."

The diagnostic distinctions from spinal infantile paralysis, from infantile paralysis of gradual onset, from spasmodic paraplegia, from progressive muscular atrophy, and from commencing cerebral and cerebellar disease, are concisely stated. The prognosis is extremely grave. Unlike cases of infantile paralysis, the victims of this disease usually die early. Arsenic, phosphorus, cod-liver oil, faradization, systematic muscular exercise, rubbing, and passive movements of the limbs, and mechanical appliances are among the measures of treatment recommended. Tenotomy is only advised in cases in which contraction is excessive.

In the Appendix, notes of twenty original cases, in addition to those mentioned in the body of the book, are given. One published by Sir Charles Bell, in 1830, is recorded; a graphic description of Meryon's first series of cases is extracted from a private pamphlet; and abstracts are given of a number of cases of lipomatous myo-atrophy in adults, which Gowers prefers not to rank as identical with the disease under consideration. The cases of Auerbach and Berger, which are classed by some authors—by Hamilton, for instance—with pseudo-hypertrophic paralysis, are believed by Gowers to have little in common with this affection. The Appendix also contains a complete alphabetical table of references to the cases analyzed.

We are not of those who bewail the multiplication of monographs, especially when, like the one before us, they are the work of able and painstaking authors. This one will prove of great value to both practitioners and specialists. C. K. M.

ART. XXX.—*Meine Erlebnisse im serbisch-türkischen Kriege von* 1876. *Eine kriegschirurgische Skizze* von Dr. F. LANGE, damaligem Assistenten an der chirurgischen Universitätsklinik zu Kiel, jetzt Arzt in New York. Mit einem Vorworte von Dr. F. ESMARCH, Professor der Chirurgie in Kiel. 8vo. ss. 156. Hannover: Carl Rümpler, 1880.

My Experience in the Turko-Servian War of 1876. *A sketch of military surgery.* By Dr. F. LANGE, of New York, formerly assistant in the surgical clinic at the University of Kiel. With a Preface by Prof. F. ESMARCH, of Kiel. 8vo. pp. 156.

THIS brochure, if it is proper to apply the term to a pamphlet not at all stitched and scarcely pasted, is a record of the author's experience during his surgical service in the Turko-Servian war. It is written rather after the manner of a journal, and therefore, as stated in the introduction, contains a good deal of personal narrative which really has little to do with military surgery. The relation of a good many cases, however, gives the book a surgical tone; which would have been decidedly increased if an index of such matters had been given. As there is no table of contents and no index, the cases of interest are buried, and will be inaccessible to the professional public. The preface by Prof. Esmarch, of elastic bandage fame, states that there is scarcely any prominent surgeon in Germany who has not had some military experience, and that it is, therefore, not to be wondered at that the younger men are anxious to serve in foreign armies when Germany is at peace. Hence he readily gave permission to his assistant to spend a few months in testing the antiseptic method of dressing, and the other new resources of surgery, on the field of battle and in the military hospitals.

The author seems to have used Lister's method quite extensively, though at times it must have been difficult to have obtained the necessary paraphernalia. He speaks on page 148 of an interesting case in which he tied the brachial artery for hemorrhage accompanying gunshot fracture of the forearm. Bleeding continued though he was sure the artery was ligated, and he accordingly searched for a second brachial, on the supposition that a high bifurcation was present in the case operated on; this he found and tied, when hemorrhage ceased and the case progressed favourably. The frequent occurrence of osteitis after operations is mentioned. This, he says, might perhaps be attributed to the dull saws likely to be employed in military surgery; but the rapid transportation of the wounded, which was required, is to his mind a sufficient cause to be at least one factor in the production of this complication (pp. 144–145). The illustrations, of which there are altogether nine, show specimens of explosive bullets and gunshot injuries of bones and viscera.

The book, for one that does not pretend to be entirely scientific, contains considerable material of interest to professional readers.

J. B. R.

Art. XXXI.—*Transactions of the American Ophthalmological Society.* Fifteenth Annual Meeting. 8vo. pp. 105. New York, 1879.

The first paper is by Dr. Knapp, of New York, *On the Operation of some kinds of Complicated Cataract.* The kinds of cataract referred to are: hypermature cataract with thickened capsule, and cataract complicated with fluidity of the vitreous. In the former kind, after the usual corneal section, and iridectomy, Dr. Knapp makes a large peripheric opening of the capsule. When the thickened capsule requires a secondary operation, he makes a horizontal incision through it along the upper border of the thick part, then a vertical one above the horizontal and joining the latter in the centre, and then couches the lower thickened portion behind the iris.

In the second kind of cataract, that complicated with fluid vitreous, the corneal incision is made less peripheric than usual, and if vitreous escapes no iridectomy is made. The author thinks that the iris, left in position, will, to a certain extent, supply the protection which the vitreous receives from the suspensory ligament, when the latter is not defective.

In a paper on the *Influence, on the Refraction, of four years of College Life*, Dr. Hasket Derby, of Boston, gives the result of two examinations of the eyes of the class of 1879, at Amherst. All the members of the class were examined on entering college, and again at the end of the course. The percentage of myopia found at the first examination was 44, and at the last 50. Myopia was developed from previous emmetropia in 10.6 per cent. of the class, increased in amount in 21.2 per cent., and remained unchanged in 16.6 per cent.

The number of the class, 83, is too small for the results of the examinations to be at all conclusive, but they are at least suggestive and valuable as far as they go. Dr. Derby proposes to follow at least four successive classes through their college course, and promises to make a more extended report three years hence.

The author says very truly that—

> "The commonly accepted statement that the greatest and most important changes in refraction are apt to take place between the 5th and 20th year, is fully supported by facts, as far as they go. But most investigations have stopped at this age. The changes that may take place after 20, and the rate at which they go on during the subsequent years of educational life, have never, as yet, been made to any extent the subject of accurate inquiry."

Dr. J. KIPP, of Newark, N. J., contributed a short paper on *Dacryocystitis in Nursing Infants.* This disease is usually considered to be extremely rare in very young children, but Dr. Kipp finds that ten per cent. of the cases occurring in his practice in the last two years were in patients under one year of age. In nearly all these cases it was associated with nasal catarrh, and in none of the cases in which he had an opportunity to probe, could a stricture be felt. The following is his plan of treatment:—

> "Unless the sac can be easily emptied by slight pressure, the lower canaliculus is slit. After that the nurse is instructed to evacuate the sac as often as every hour, and to remove the secretion from the conjunctival sac. If there is much swelling of and secretion from the Schneiderian membrane, I remove the secretion covering it, by means of absorbent cotton wrapped around a dentist's cotton holder, and then apply a one or two per cent. solution of nitrate of silver to the swollen membrane by means of a large camel's hair pencil once a day. I never use injections into the nose in infants, having seen more than one case in which, even in careful hands, they were followed by purulent inflammation of the middle ear. If the disease does not get well under this simple treatment, in the course of three or four weeks, I use Bowman's probes and injections of astringents in the same manner as in adults."

Dr. E. DYER, of Pittsburgh, Pa., reports a *Case of Sarcoma of the Conjunctiva.* In a healthy child, æt. 6, there was a large tumour of the conjunctiva, commencing a little to the inside of the median line of the cornea and involving the whole conjunctiva of the ball to the outer canthus. An operation had been performed on the eye, and the present mass was the growth of only one month. The entire contents of the orbit were enucleated, and the cavity thoroughly cauterized with solid nitrate of silver. The tumor was as large as an English walnut, and proved to be a spindle-celled sarcoma. The growth commenced again in less than a week and grew rapidly to an enormous size, and another tumour formed near the angle of the jaw. The skin of the upper lid burst, and violent hemorrrhages followed. The child died six months after Dr. Dyer first saw her.

In a paper on *Extirpation in Panophthalmitis*, Dr. G. C. HARLAN, of Philadelphia, discusses the propriety of the operation in such cases. Graefe advised against extirpating an eye in a state of panophthalmitis, on the ground that the danger of consequent meningitis was so great as to render the operation entirely unjustifiable. From the result of a number of cases in his own experience, and the analysis of such cases as he could find recorded, the author is inclined to agree with those who think that the danger has been overrated, and that in some cases, at least, the operation is advisable.

Dr. DAVID WEBSTER, of New York, reports a case of *Prolapse of Retina, in consequence of Hemorrhage following Iridectomy for Glaucoma.*

There was no hemorrhage at the time of the operation, but it was excited about an hour afterwards by violent vomiting, believed to be due to chloroform. A membranous mass protruded from the wound and hung down over the cornea; it was removed by the scissors, and was found, on microscopical examination, to consist of retina.

Dr. W. F. NORRIS, of Philadelphia, exhibited *Water-colour Drawings of some of the rare forms of Diseases of the Eye*, representing: I. Vascular new Growths in the Vitreous; II. Recurrent Papilloma of the Corneoscleral Junction; III. Sarcoma of the Iris; IV. Gummata of the Iris and Ciliary Body; and, V. Xerosis of Conjunctiva and Cornea, following Gelatinous Trachoma.

Dr. H. D. NOYES, of New York, gives an interesting account of a *Paresis of Inferior Oblique Muscle* occurring in his own case. He was thrown violently from a horse, and received an injury of the right malar bone. From the symptoms noted,

> "It was plain that the malar bone had been forced backward and outward, so as to be loosened from its attachment to the neighbouring bones, and that a line of fracture had gone through the infraorbital foramen and the place of origin of the inferior oblique muscle."

Dr. H. KNAPP, of New York, reports a case of *Tumour of the Optic Nerve*, and one of *Sarcoma of the Choroid, removed at an early Stage.* An attempt was made to extirpate the former without removing the ball, but was only partially successful; "the distal end at the operation was as thick as its centre, leaving no doubt that the tumour had only partially been removed." Exophthalmus, with sloughing of the cornea from exposure, and, finally, phthisis bulbi followed. Subsequent symptoms indicated that the growth, which proved to be a myxomatous glioma, was invading the cranial cavity.

In a paper on *The Diffusion Circles of Ametropia*, Dr. A. G. HEYL, of Philadelphia, proposes to ascertain if any difference worthy of note obtains between the diffusion circles as they actually exist in the cases which present themselves to us in the routine of practice, and in the typical hypermetropia or myopia which may be made to exist in the diagrammatic eye. He concludes that, while in the diagrammatic eye the diameters of the circles of diffusion are in direct proportion to the degree of ametropia, this is not the case with the eyes met with in practice. Circles of diffusion of different sizes may be found in connection with the same grades of hypermetropia, on account of variations in the corneal curve, the size of the pupil, and the position and focal distance of the crystalline lens. Dr. H. thinks that this is one reason why some patients are so much more annoyed than others by low degrees of hypermetropia. He also thinks that a difference in the circles of diffusion may determine which eye shall squint where both have the same degree of hypermetropia.

Dr. H. D. NOYES, of New York, has collated *Statistics of Extractions of Cataract by the Flap Operation and by von Graefe's Method*, including 11,000 cases of each, and finds the percentage of loss to be 16.91 in the former and 6.52 in the latter.

Dr. J. F. NOYES, of Detroit, reports *A Case of Intra-orbital Tumour of rapid growth, which resulted in Death.* The patient was a healthy looking boy, æt. 7, and the disease commenced with an injury of the eye by a foot-ball. The protruding, inflamed, and painful eye was enucleated a few weeks after the accident, but no further operative proceeding was permitted. The growth in the orbit increased rapidly, and death ensued four months after the injury. The tumour weighed one and three-quarters pounds, and proved to be a round-celled sarcoma.

A case of *Foreign Body in the Posterior Pole of the Lens—purulent Cyclitis*, is reported by Dr. THOS. R. POOLEY, of New York. On first examination, a small foreign body was seen in the posterior pole of the lens, but was concealed as the lens became opaque. About two months after the accident, cyclitis set in, necessitating enucleation of the ball, and it was found that the foreign body, a chip of iron, had passed through the lens and fallen upon the ciliary body, where it was lodged in a small abscess. G. C. H.

ART. XXXII.—*Die Lungensyphilis und ihr Verhältniss zur Lungenschwindsucht.* Von Dr. JOH. SCHNITZLER, K. K. A. O., Professor an der Wiener Universität, und Vorstand der Abtheilung für Hals- und Brustkranke an der allg. Poliklinik. 8vo. pp. 60. Wien: Urban & Schwarzenberg, 1880.

Pulmonary Syphilis, and its Relation to Pulmonary Consumption. By Dr. JOHN SCHNITZLER, Professor in the University of Vienna.

PROF. SCHNITZLER has long been favourably known in this country by his contributions to the therapeutics of diseases of the throat and chest; and the present clinical contribution from his pen sustains his well-deserved reputation as an astute and accurate observer. He has watched the evolution of a number of typical cases of pulmonary syphilis which have been under observation during a series of years. Several of these cases are narrated in detail, with illustration of the laryngoscopic appearances in their worst phases, and subsequent to successful specific treatment. He takes the ground—and, in our estimation, upon efficient data—that positive diagnosis of pulmonary syphilis requires confirmative evidence of syphilitic ulceration in the larynx. Impressed with the belief that the lungs are liable to syphilitic disease much more frequently than has heretofore been suspected, he is careful to indicate the special phenomena which differentiate pulmonary syphilis from pulmonary phthisis in tainted subjects, for which it is frequently mistaken.

Two forms of the disease are recognized: diffuse infiltration, and circumscribed gummata.

After the narration of a few observations of his own, the author gives a short, but sufficient account of the previous literature of his theme; then discusses its pathological anatomy, its etiology, pathology, symptomatology, diagnosis, and treatment; and closes with a summary of the conclusions derived from his observations and researches. As this summary is concise, and fairly represents the points discussed in detail, we present a free translation of it as representing the author's views better than any running commentary of our own:—

"1. Pulmonary syphilis occurs much more frequently than has been hitherto supposed. It is self-evidently always a sequel of general infection, and appears most frequently at a late and far advanced stage of syphilis, although it may become developed at an earlier, the so-called second, stage. It is never, however, the first and only evidence of constitutional syphilis; but always makes its appearance after other organs (skin, mucous membrane, bones, liver, testes, brain) have become attacked.

"2. The symptoms of pulmonary syphilis are, in general, the same as those of pulmonary phthisis; and consequently the affection is difficult to recognize, with certainty, during life. Even an autopsy is not always competent to distinguish the two processes from each other, especially as regards diffuse syphilitic infiltration of the lung; and even the far more characteristic gummata may be readily confounded with tubercles.

"3. The diagnosis of pulmonary syphilis rests upon the functional disturbances, and the evidence of alterations in the lungs; on the course and influence of the treatment; on the previous history of the case, and the evidence of syphilis in other organs.

"4. The prognosis, although serious, is not absolutely unfavourable, especially when the disease is recognized early; but the possibility of cure is not out of the question even in a very advanced state.

"5. If pulmonary syphilis is not recognized early, and treated accordingly, it usually leads to pulmonary consumption, with a fatal termination.

"6. The treatment must be antisyphilitic as a matter of course. Iodine and mercury are the specific remedies, only the treatment must be energetic at the same time that it is cautious. Under these circumstances such unexpected and brilliant results are often obtained as involuntarily to recall an expression by Ricord, 'Everything is possible in the treatment of syphilis, even the apparently impossible!'"

A number of interesting points are touched upon in the monograph of Dr. Schnitzler. Thus he makes the observation that but few cases of hereditary syphilis have been recorded in which the pulmonary affection appeared, for the first time, later in life than a few weeks after birth. He believes that pulmonary syphilis is frequently manifested as bronchial and pulmonary catarrh, as well as in the severe forms already alluded to, and often occurring but a few months after infection. He is inclined, too, to attribute many cases of chronic and obdurate asthma to syphilis, especially those cases so remarkably influenced for permanent good by large doses of iodide of potassium.

In diagnosis, the location of the deposit is one of the features differentiating the affection from phthisis, the accumulations being most frequently in the middle and lower lobes, usually the middle lobe of the right lung, and extremely rarely at the apex; while it is much more likely to remain unilateral.

The impression remaining in the mind after perusal of this interesting and timely article is, that many cases of presumed tuberculous phthisis in syphilitic subjects may be syphilitic phthisis, and amenable to antisyphilitic treatment. Dr. Schnitzler is to be commended for the admirable manner in which he has discussed his theme. J. S. C.

Art. XXXIII.—*Clinical Lectures on the Diseases of Women, delivered in Saint Bartholomew's Hospital.* By J. Matthews Duncan, M.D., LL.D., F.R.S.E., etc. 8vo. pp. 175. Philadelphia: Henry C. Lea, 1880.

These lectures of Dr. Duncan first appeared in the *Medical Times and Gazette* and in the *Medical Examiner*, and are now republished in book form, and dedicated to Dr. Fordyce Barker, as "a worthy representative of American obstetrics and gynæcology."

The call of the author from Edinburgh to London has opened to him a wider field for his skill and usefulness, but will scarcely add much to a reputation already of the highest order. Dr. Duncan has a world-wide fame, for closeness of observation, originality of thought, and skill in diagnosis and treatment. These lectures delivered at St. Bartholomew's Hospital are what might have been anticipated from one so highly esteemed as a writer and teacher. As a general gynæcologist, Dr. Duncan has few equals, and no superior; and his book is the embodiment of his thoughts and observations, minutely and carefully set forth, and upon a variety of subjects.

These lectures having been delivered to students, and reported chiefly in short-hand, are given without any references to authorities, which are rarely quoted in clinical teaching. They are evidently based very largely upon personal investigation, experience, and success or failure. It is this which gives the chief value to the work, which we heartily recommend to the American practitioner as a valuable guide for practice. R. P. H.

ART. XXXIV.—*Physiology and Histology of the Cerebral Convolutions. Also, Poisons of the Intellect.* By CHARLES RICHET, A.M., M.D., Ph.D., former Interne of the Hospital of Paris. Translated by EDWARD P. FOWLER, M.D. 8vo. pp. xv., 170. New York: Wm. Wood & Co., 1879.

THIS book is an admirable companion volume to the monograph of Ecker on the "Cerebral Convolutions of Man," and to the works of Ferrier and Charcot on the functions of the brain and the localization of cerebral disease. Its author has explored with industry the literature of his subject, both as found in text-books and journals; and he also speaks as one having practical knowledge, particularly in the physiological part. Both the gross and microscopical characters of the cerebral cortex are presented in the first part, which treats of the structure of the convolutions. In part second, under the head of physiology of the convolutions, after an anatomical and historical introduction, in Chapter I., he takes up the excitability, thermic, electric, and chemical conditions, and the circulation in the convolutions; in the second chapter are considered the motor functions, methods of investigation, action upon the muscles of animal and of organic life, aphasia, theories of motor innervation, and the sensorial and intellectual functions.

The explanation, with schematic plates, of the morphology of the cornu ammonis and gyrus hippocampi is a clear and comprehensible exposition of a somewhat difficult subject The importance of a study of the olfactive bulb or lobe is pointed out. Richet says truly of it that it is as distinct from a convolution as from a nerve; it is an organ in itself, a kind of aberrant type, and has been rightly compared by Luys to the retina.

A few original experiments are recorded, some of them demonstrating, or apparently demonstrating, among other things, that chloral paralyzes the gray cortex, and that the excito-motor apparatus of respiration is the last to be paralyzed by poisons.

Many of the historical notes scattered through the book are not to be found in similar publications of recent date. Malpighi probably discovered the cells and nerve fibres of the cerebral cortex; Vicq d'Azyr and Baillarger first well described the structure of the convolutions as seen by the naked eye; Meynert, Luys, and Betz made known their microscopic structure; Gall proved that intelligence is one of their functions; Flourens demonstrated that the encephalic nervous system is the seat of mental power and the origin of sensation and motion; Bouillaud showed by pathological facts that language is located in the anterior lobes—Paul Broca that it is confined to the third frontal convolution of the left side; Foville, Leuret, Gratiolet, and Broca determined the constancy of the form of the brain folds; the researches of Fritsch and Hitzig established the motor power of the cortex cerebri; those of Ferrier re-affirmed and expanded the same doctrine, and added new and important facts in regard to sensory zones; finally, in a medical point of view, Charcot and his pupils placed on a firm basis the theory of localization.

We are glad to see proper prominence given to the good work in nervous histology of H. Major and Bevan Lewis.

In regard to exact localization, Richet's views are rational:—

> "Absolute inflexible localization of the motor zones," he says, "is all but impossible. There are zones which encroach upon each other, but none of these zones have limits of determined rigorous constancy. The best proof of this is the difference existing among authors.
>
> "If I were to venture an opinion on the subject, I would say that, so far as concerns details, the point is of small importance. It is of no special importance to know if there is a centre for the ear, and exactly how many millimetres it is distant from the centre for the pupil. That which is important is to know if there certainly are centres for certain determined movements."

His views in regard to the general subject of localization are peculiar, and, indeed, a little hard to make out clearly. He seems to believe in *psycho-motor fasciculi*, but not psycho-motor centres, in exactly the sense of Hitzig, Ferrier, and others, as will appear from the following quotations:—

> "It seems that the periphery of the convolutions is the seat of complex actions—actions not understood—*intellection;* that the excitation of the will is transmitted from it to the ganglionic centres by special fibres, and that from a lesion of these fibres paralysis ensues."
>
> "Are there psycho-motor centres? That is doubtful and of very little importance. It is a great result for united physiology and pathology to have demonstrated that the psycho-motor fasciculi are more developed in man than in the dog.
>
> "With most individuals, though not with all, psycho-motor fasciculi exist, well limited, and may be individually paralyzed, atrophied, or super-excited."

He believes at least in the existence in man of a cerebral psycho-motor apparatus.

We notice here and there errors and enormities of spelling and expression, some of which are doubtless to be credited to the author and others to the translator. "Lunatic *assylum*" is a suspiciously suggestive mistake; "Heubner" in the text is rendered "Hubner" in a foot-note on page 40, where he is made to say that Charcot has shown the researches of this investigator to have been "simultaneous and not *posterior*" to those of Duret, a use of a word which would suggest the necessity of a study of a dictionary of synonyms. By the way, what Charcot demonstrates is just the opposite to this, namely, that *Duret's* investigations were exactly contemporaneous with those of Heubner. The use of such a term as "anæmied" is almost sufficient to cause an attack of spasm in a purist.

The abridged monograph, which has, at the author's suggestion, been tacked on to the end of the volume by the translator, would have been far better omitted. It has no claims to be incorporated in a work on the physiology and histology of the convolutions, except from the fact that it has been written by the same author. On the title page the essay is called "Poisons of the Intellect;" in the body of the book it becomes "Poisons of the Intelligence;" as if the author or translator, having some uncertainty as to which designation was the more appropriate, had concluded to furnish his doubts with a loop-hole for escape by using both.

The book is printed on good paper, and is well illustrated with histological and anatomical plates and tracings of electrical experiments. It needs an index, a defect which it shares with several other recent works on localization. C. K. M.

ART. XXXV.—*A Manual of the Practice of Surgery.* By W. FAIRLIE CLARKE, M.D. (Oxon.), F.R.C.S., Late Assistant Surgeon to Charing Cross Hospital. Third Edition. 18mo. pp. xi., 443. New York: G. P. Putnam's Sons, 1880.

The same, Revised and Edited, with additions, by an American Surgeon. 8vo. pp. xi., 316. New York: William Wood & Co., 1879.

THAT this book of Mr. Clarke's should make its appearance before the medical public in America under such diverse forms, is pretty good evidence of the demand which exists for condensed, comprehensive manuals, over thorough and extended treatises. It is one of the indications of the spirit of the times that it is willing to sacrifice much—very much for brevity. Despite the enlarged and extended horizon which greets the eye of the surgical writer, if he would be successful, he must apply such an amount of compression as will succeed in getting his book into prescribed limits; he must lay the production of his labour upon a Procrustean bed and make it conform to the size required.

Mr. Clarke has really produced a wonderful book; wonderful in its aim which is no less than the whole field of modern surgery, and remarkable for the cleverness with which he has striven to attain the object aimed at. For the book is well written, and its author has not even neglected the graces of style and diction; indeed, the work is quite noticeable for the number of its literary quotations. Between pages 44 and 47 may be noticed quotations from Wordsworth, Boswell's Life of Johnson, Milton, and Shakspeare, and very good quotations they are too, but by no means favourable to the telegraphic style, which the average medical student now yearns after. What does he care for such ought-to-be-forgotten old fogies? It wastes both time to read, and space to print their words.

Mr. Clarke divides his subject into 1. Surgical diseases; 2. Injuries; 3. Constitutional Effects of Surgical Diseases and Injuries; 4. Diseases and Injuries of various Parts, Tissues, and Organs; 5. Operations: and under these heads the reader will find sound views inculcated, though from the unavoidable brevity of the author's utterances the student will not always get quite as clear ideas as are desirable. For instance, under the head of fatty tumours, on page 31, we are told "an incision should be made across, and then the entire mass, capsule and all, should be torn from its connections." Now the student will find in practice, that the various lobes of a fatty tumour, while held together by an investing capsule, are surrounded by a more dense envelope, to remove which will require a careful dissection. When such a tumour is removed in the ordinary way, there will be left a shining surface which might lead the student, relying upon Mr. Clarke's description, to think he had failed to remove the capsule proper, and cause him to go to work, very unnecessarily to dissect out this fibrous envelope. On page 41, Mr. Clarke says that "Rodent ulcer is probably an epithelioma." Practically this statement can do no harm, but it is hardly correct histology.

While speaking of hemorrhage the author gives considerable prominence and space to an illustration of the nodose bandage, as applied to a cut temporal artery, which the real importance of the appliance hardly warrants, in view of the extremely condensed plan of the book. But the whole subject of hemorrhage is well treated, and the pronounced endorsement of the ligature as superior to any other means of securing a cut artery, will commend itself to the practical surgeon.

It will surprise most surgeons to find erysipelas treated of with recommendations of a mild antiphlogistic course, and without a very strong endorsement of the tincture of the muriate of iron. Mr. Clarke also objects to the use of cold applications in this disease. Indeed, antiphlogistic treatment is very often advised throughout this book, and is sometimes depended upon too much in cases of local inflammation, such as whitlow, where it is recommended until suppuration is established, after which an incision is advised. Such a course will entail much suffering upon those who are passing through one of these most painful affections, whereas a very early incision, without regard to the existence of pus, will mitigate, if it does not at once, and entirely, relieve the pain, and will certainly limit the destructive range of the inflammation.

In the treatment of fractures and dislocations recommended in this book, the American surgeon will miss many familiar methods and apparatus. It is indeed surprising to read a description of the reduction of a dislocation of the shoulder and find no reference to manipulation, a method so far superior to the exhibition of pure brute force with the heel in the axilla. Where dislocations of the hip are considered, due prominence is given to the reduction by manipulation.

The brief remarks with which the subject of operations in general is introduced are most judicious and worthy of most careful reading. They dwell upon the points which are too often forgotten or neglected; that the patient should be fully informed of the necessity and nature of the operation, with an honest statement of the prospects it holds out of relief; that he should be carefully prepared, when time admits, and that where the operation is to be done in a private house, the nursing should be scrupulously prearranged for. Surgical experience has always shown that much of the success of operations depends upon the preliminary and after care which is exercised; and that indifference to these matters is most detrimental to the patient's interests. Indeed, the temerity of some surgeons is most surprising. While engaged upon the preparation of this notice, the writer of it was called hurriedly to see a patient said to be dying. He found a man upon whom tracheotomy had been done two hours before, and from whose trachea the tube had escaped. The surgeon had done the operation and left the patient without any proper nurse; the inner tube had of course become clogged, and as no one had been told how to remedy the difficulty, the unfortunate man in his frantic efforts to obtain air had displaced the whole tube. That the patient left to such after-care should have succumbed within twenty-four hours will surprise no one.

Our remarks thus far have been based upon the first-named and English-printed edition of Mr. Clarke's book. It remains that we should refer to the American-printed edition. This has received quite numerous additions at the hand of an American surgeon. Among these are more or less full notices of Martin's elastic bandage, Sayre's plastic jacket, the treatment of fractures of the femur by extension, and the new treatment of fractured clavicle by adhesive plaster. A new section upon transfusion has been inserted, and numerous notes given on cancer, the treatment of wounds, hernia, diseases of the rectum and genito-urinary organs, anæsthesia, and amputation. In the American edition will also be found an account of the great invention of Dr. Henry J. Bigelow, entitled Litholapaxy, an invention destined to take very high rank among remedial measures, and one which has already exercised a marked modification upon lithotrity.

The illustrations in the two editions do not correspond. In the English there are one hundred and ninety, while in the one printed in this country, although we are told that many have been added, the number only reaches to one hundred and sixty-eight. The American editor has made most judicious additions, and has certainly added to the value of the book, but we cannot think that the medical student who has once got through with the terrors of his final examination, and has resorted to Mr. Clarke's work to cram himself under the stimulus of such terror, will do wisely to rely upon such an abstract for surgical information. This criticism applies only to the plan of the book, for admitting the propriety of the plan we can safely say the work has been well done.

The English edition is a very pretty specimen of book making; the American is—well—very ugly, but it is also very cheap. S. A.

ART. XXXVI.—*Pharmacographia. A History of the Principal Drugs of Vegetable Origin met with in Great Britain and British India.* By FREDERICK A. FLÜCKIGER, Phil. Dr., Professor in the University of Strassburg, and DANIEL HANBURY, F.R.S., Fellow of the Linnean and Chemical Societies of London. Second edition. 8vo. pp. xx., 803. London: Macmillan & Co., 1879.

THIS Pharmacographia—*writing about drugs*—treats only of those drugs of vegetable origin, "which are commonly kept in store by pharmacists, or known in the drug and spice market of London," and "of a small number which belong to the *Pharmacopœia of India*." The botanical origin, history, physical properties, microscopic structure, chemical composition, substitutes, adulterations, etc., of each article are fully and well described, but nothing is said about the pharmaceutic or therapeutic uses of the articles named. "The medicinal uses of each particular drug are only slightly mentioned," because, the authors tell us in their preface, "the science of therapeutics lies within the province of the physician and may be wisely relinquished to his care."

To practising physicians generally this admirable addition to the literature of the materia medica is not likely to be of much importance, for the reason that all they need or care to know about drugs, simply as drugs, may be found in the dispensatories and pharmacopœias. But to pharmacists and druggists we cheerfully recommend the work as one of extensive learning, and of general interest to them. It will be found valuable for reference by those interested in the purchase and sale of crude vegetable drugs.

The manufacture of the volume, printing, paper, binding, is in every respect satisfactory. W. S. W. R.

ART. XXXVII.—*Transactions of the American Otological Society.* 12th Annual Meeting, 1879. 8vo. pp. 75. Boston: A. Williams & Co., 1879.

THE papers in this number of the Society's Transactions, though short and not very numerous, are by no means wanting in interest. The first is by Dr. H. D. Noyes, of New York, who reports a case of *Ménière's disease following parotitis.* The patient had an attack of acute inflammation of both parotid glands with obstinate nausea, dizziness, and sleeplessness, but no headache. On the 12th day of the disease, the right testicle became inflamed, and about the same time he began to have tinnitus in the right ear, with loss of hearing, which in a few days became total. He was sick for about three weeks, and when he commenced to go about was so giddy that he sometimes had difficulty in walking.

When he attempted to walk with closed eyes he turned to the left and almost fell. With eyes closed and feet close together he could not stand alone.

> "It would appear that a metastatic inflammation was set up in the labyrinth of the right ear, at the same time that a similar process took place in the testicle. We know how common is the latter affection, but the occurrence in the ear is certainly rare."

Under the head of *Contribution to the Pathology of the Temporal Bone,* Dr. Thos. R. Pooley, of New York, reports a case of "Fracture of the Petrous Portion of the Temporal Bone;" and one of "Chronic Otitis Media, Necrosis of Inner Ear, Abscess of Cerebellum."

The first case was that of a man 30 years of age who was thrown from a wagon upon a hard pavement. He was able to walk a short distance, but soon became unconscious and afterwards comatose, with convulsive movements on the right side. There was a rupture of the anterior inferior portion of the membrana tympani of the right ear and a copious flow of bloody serum. Death occurred in less than twelve hours.

On post-mortem examination, there were found a thick clot of blood as large as the hand immediately under the right temporal bone, and a fracture extending from the vertex through the temporal bone and across the base of the skull to the foramen magnum. This fracture was joined, just above the mastoid process, by another, two inches long, running upwards and backwards. The fissures ran along the axis of the auditory canal, in its deeper parts, both on its upper and lower walls, and the tympanum was extensively injured, but the inner ear escaped entirely. The author thinks that if the patient could have recovered there would not have been total deafness, as the nervous apparatus was intact.

The second case was that of a lady, 23 years of age, who had suffered with frequent attacks of earache and otorrhœa since childhood. The last attack was accompanied by decided cerebral symptoms with nausea, vomiting, and dizziness. There was an offensive discharge from the ear, and she complained of earache and pain in the vertex. She retained consciousness until a few hours before death.

An abscess as large as an English walnut with a well-formed pyogenic membrane, and containing offensive pus, was found in the left hemisphere of the cerebellum. There was no softening in the vicinity of the abscess, and the rest of the brain was healthy. There was no necrosis of the inner surface of the bone, but the part which lay in apposition with the abscess was blackened. There was extensive disorganization of the middle and inner ear, but no trace of a necrotic path communicating with the cavity of the skull could be found. The abscess of the cerebellum was not thought to be of recent origin. The simultaneous occurrence of labyrinthine and cerebellar disease is a point of interest, and the author suggests that the vertigo and unsteadiness of gait, which were very marked, may have been due to the former.

Dr. H. Knapp, of New York, contributes a *Case of Trephining of the Mastoid in Acute Suppurative Otitis Media; Perfect and unusually rapid Recovery.*

> "In an acute otitis media, there was, *without diminution of the discharge*, excruciating headache and tenderness and puffiness of the mastoid region. By trepanation of the mastoid pus was liberated, the patient's headache relieved at once, and the membrana tympani restored in two weeks. The opening of the mastoid closed in four weeks, and the hearing was normal again in six."

The opening was made with Buck's drill, and enlarged with a gouge, and a tube was inserted.

Dr. Clarence J. Blake, of Boston, reports *A Case of Purulent Inflammation of the Middle Ear accompanied by Facial Paralysis.* The patient, 17 years of age, had profuse otorrhœa after scarlet fever at 5, with several recurrences since. After the last attack in the left ear, there followed total paralysis of all motor branches of the left facial, and taste was wanting on the left tip of the tongue.

There was a polypoid mass on the posterior portion of the tympanic cavity. The growth was destroyed by the application of muriated tincture and persulphate of iron, and there was partial recovery from the paralysis under treatment by galvanism. The author considers the case "interesting in regard to the location of the polypoid growth and the symptoms evoked, in connection with the observations of Politzer on the occurrence of openings in a thinning of the bony wall of the facial canal."

Dr. H. Knapp, of New York, describes *A Case of Supernumerary Auricle of Rudimentary Development* (Polyotia).

> "The cutaneous appendix in front of the right ear was situated 3 mm. before the base of the tragus, and its line of insertion stretched in a slight curve, with the concavity backward, in front of the ear, about 35 mm. in length. It represented a puckered-up piece of skin, which, by unfolding, showed a larger upper portion, rising about 20 mm. over the surface of the skin, a depressed middle, and a small lower portion. In the upper and middle portions hard substances, feeling like cartilages, were inclosed, while the lower had a uniform softish consistence. The appendix when spread out, had the appearance of a misshaped auricle, and the cartilage which was present in the upper and middle portions, and not in the lower, made it still more probable that I had to deal with a pinna and lobule."

Forty-six out of the seventy-five pages of this number of the Transactions are occupied by the *Report on the Progress of Otology*, by Drs. Vermyne, of New Bedford, and Webster, of New York. This report, though able, full, and interesting, is perhaps a little out of place in the Transactions of a Society, and is unnecessary as this work is well done in the journals. The Society has, therefore, decided to dispense with this report in future numbers.

The print is unusually clear and distinct, and, altogether, the Transactions form a remarkably neat and creditable pamphlet. G. C. H.

ART. XXXVIII.—*A System of Medicine.* Edited by J. RUSSELL REYNOLDS, M.D., F.R.S., Professor of the Principles and Practice of Medicine in University College, London, etc. etc. *With numerous additions and illustrations.* By HENRY HARTSHORNE, A. M., M. D., lately Professor of Hygiene in the University of Pennsylvania, etc. etc. In three volumes. Vol. II. Diseases of the Respiratory and Circulatory System. 8vo. pp. 935. Philadelphia: Henry C. Lea, 1880.

THE comparatively recent publication of the two volumes of the English edition of Reynolds's "System of Medicine," which are included in the second volume of the American edition, has rendered it unnecessary for Dr. Hartshorne to introduce as many notes as he did in the preceding volume. Everywhere, however, are to be found evidences that he has carefully supervised its preparation for the press, and that he has made additions wherever these seemed to be called for. Among the most important of these are an article on "Hæmophilia," in which the leading features of this disease are clearly and succinctly portrayed, and some remarks on the occasional propriety of bloodletting in the treatment of pneumonia, and on the contagiousness of phthisis. He holds that in the beginning of an attack of the former disease its severity may be frequently mitigated and its duration shortened in vigorous subjects by the abstraction, either by venesection or locally, of a small amount of blood. The same remedy may also be demanded, he thinks, in cases in which the right heart is overloaded, or in which œdema of the lungs coexists with the inflammation. There are conditions in which we have ourselves had recourse to bloodletting, and we think with advantage to the patients, but we are far from wishing to see it restored to its former place in the treatment of this disease.

The conclusions which Dr. Hartshorne reaches in regard to the contagiousness of phthisis seem to us so well founded and so thoroughly in accord with recent observations that we shall transcribe them in full.

They are: 1. "Tubercle is not a specific morbid product, and therefore in no strict sense can phthisis be called a contagious disease. 2. Exposure to the atmosphere breathed by consumptives is not attended by danger, so long as good ventilation is maintained. 3. Inhaling the breath of patients far advanced in phthisis in close rooms, and for long periods together, has been, in some instances, followed by the development of the disease in persons previously healthy. 4. Therefore we should always advise that no healthy person shall sleep in the same bed with a consumptive; nor, if avoidable, in the same room unless ample ventilation is maintained."

Dr. Hartshorne also adds to the section on "Diseases of the Heart" a few remarks in regard to "Irritable Heart," a condition, which was of frequent occurrence among the soldiers during the late civil war, but which, while it had, previously to the appearance of his paper, been generally recognized by army surgeons, and even fully alluded to in an address delivered before the Philadelphia County Medical Society by Prof. Alfred Stillé in February, 1863, he was the first to describe in a scientific journal.[1]

The value of the work to the student has been materially enhanced by the insertion of numerous illustrations. J. H. H.

ART. XXXIX.—*First Lines of Therapeutics, as Based on the Modes and the Processes of Healing, as occurring spontaneously in Disease; and on the Modes and Processes of Dying, as resulting naturally from Disease. In a Series of Lectures.* By ALEXANDER HARVEY, M.A., M.D. (Edin.), Emeritus Professor of Materia Medica in the University of Aberdeen, etc. 12mo. pp. xvi., 278. New York: D. Appleton & Co., 1879.

THE purpose of the twenty-four lectures first delivered in this volume is to impress upon the students of medicine that the first great lesson of therapeutics is that the inherent tendency of most diseases is to a favourable termination, and that they spontaneously cure themselves through natural modes and processes under the influence merely of suitable regimen and nursing, and with such assistance alone the organism cures itself. Disease is not an entity to be expelled or destroyed by drugs, but merely an abnormal performance of the functions of organs.

The second great lesson is how to recognize the fatal tendencies and the modes of the fatal termination of diseases. "Without a sound knowledge of the several modes of dying and of the physiology of the dying processes, it is impossible to have a right understanding of the physiological actions of a large number" of the articles of the materia medica, especially of the most efficient of them. Therefore a thorough acquaintance with the natural history or progress of disease, and the natural modes of death, best qualifies the physician to treat diseases efficiently.

Such is the theme and substance of the work, which is remarkable for frequent iteration of the author's views, and for the prolixity of his style. In support of his positions he often quotes or refers to Cullen, Alison, Gubler, Forbes, Latham, Travers, Watson, and others. W. S. W. R.

ART. XL.—*Experimental Researches in the Regional Temperature of the Head, under Conditions of Rest, Intellectual Activity, and Emotion.* By J. S. LOMBARD, M.D., formerly Assistant Professor of Physiology in Harvard University, U. S. 8vo. pp. viii., 211. London: H. K. Lewis, 1879.

CEREBRAL thermometry, owing to the labours of Broca, Gray, Maragliano and Sepelli, and others, has during the last few years attracted a large share of professional attention. Dr. Lombard published in 1867 some investigations made with thermo-electric apparatus on the temperature of the human head, in states of repose, and of intellectual and emotional activity. He was only preceded by Albers, of Bonn, whose experiments, in 1861, were conducted among the insane.

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[1] See number of this Journal for July, 1864.

The objects of the experimental researches recorded in the volume before us were primarily to determine the normal relative temperatures of different portions of the surface of the head, when the brain is inactive; and to study the effect of different mental states on these temperatures. The ultimate objects were to furnish data for examining head temperature in morbid cerebral conditions; and to investigate if possible the parts played by different portions of the surface of the brain in intellectual work and in the various emotions.

Part I. contains a description of apparatus employed, and experimental methods adopted in the examination of the temperature of the head; Part II. is concerned with the relative temperatures of different parts of the surface of the head in the quiescent mental state; and Part III. with the effect of intellectual and emotional activity on the temperature of the head.

The head was divided into an anterior, middle, and posterior *region;* and these regions were subdivided into *tiers* by equidistant horizontal lines, and into *districts* by vertical lines. A large number of elaborate tables show the results of observations on symmetrically situated spaces of the two sides of the different regions; and on regions in spaces on one and the same side. Diagrams indicating the distribution of comparative superiority of temperature on the two sides of the head in the different regions, are also given; and at the end of the book is a diagrammatic plate of the points of the cerebral convolutions underlying some of the most important of the subdivisions of the surface.

In the anterior, middle, and posterior regions, he found that every space may be of higher temperature on either the right side or the left side, in turn. Superiority of temperature of one side of the head over the other occurs little less frequently than that of one tier or district over another on one and the same side. The two sides of the head are rarely equal in temperature, but the balance of superiority shifts so frequently from one side to the other, that the percentage of superiority for either side, in a given number of observations, is comparatively small. The anterior region has the highest, and the middle region the lowest average temperature; the highest individual temperature occurs in the anterior, and the second highest in the middle region; the lowest in the middle and the second lowest in the posterior region. Dr. Lombard concludes after a careful study of the question, that small differences of temperature at the surface of the brain may be detected at the outer surface of the head, but "does not feel inclined to place much reliance on the examination of the relative temperature of different parts of the integument of the head as a means of medical diagnosis, although such examinations may in some cases lead to interesting results."

He found that intellectual work, and emotional activity to a greater extent, caused a rise of temperature in all three regions of the head. The order of the regions with regard to both degree and rapidity of rise was (1) anterior, (2) middle, and (3) posterior region. The greatest elevations of temperature during intellectual work *of all kinds* were usually met with in the spaces which lie over a tract of the brain-surface formed by the posterior portion of the first and second frontal, and the ascending frontal convolutions, and possibly, crossing the fissure of Rolando, the anterior part of the ascending parietal convolution. Testing the effect of verbal expression in intellectual work on the comparative rise of temperature in the surface over Broca's convolution, it was found that the average was greater than that ordinarily obtained in comparison with the space in the middle region in which the experimental conditions were as nearly as possible the same; still, this average was hardly enough to justify a conclusion that the temperature of the surface over Broca's convolution is specially affected by reading aloud. In the greater number of cases experimented upon, in all three regions, the greater rise of temperature, both in intellectual work and in emotional activity, takes place on the left side of the head. His final inference is that—

> "taking the rise of temperature as the best available measure of functional activity—the relative elevations of temperature of areas of a certain size of the outer surface, during mental exercise, represent with considerable correctness the relative degrees of functional activity of the corresponding underlying portions of brain surface."

It will be seen, from this *resumé* of the most important conclusions arrived at by Dr. Lombard, that his book will prove of special interest to the students of localization, and to those engaged in local thermometrical investigations. He deserves all praise for the careful, minute, and elaborate character of his work, of which we have only given a sketchy outline. In all he has made no less than sixty thousand observations. C. K. M.

ART. XLI.—*Health Reports.*

1. *First Annual Report of the State Board of Health of the State of Rhode Island for* 1878. Pp. 200. Providence, 1879.
2. *First Annual Report of the State Board of Health of Kentucky*, 1878. Pp. cxxiv., 84. Frankfort, 1879.
3. *Third Report of the Board of Health of the City of Nashville for* 1877 and 1878. Pp. 384. Nashville, 1879.
4. *Annual Report of the Board of Health of the State of Louisiana for the year* 1878. Pp. 192. New Orleans, 1879.
5. *Seventh Annual Report of the State Board of Health of Minnesota, January*, 1879. Pp. 133. Minneapolis.
6. *Fifth Biennial Report of the State Board of Health of California for the years ending* 1878 *and* 1879. Pp. 115. Sacramento, 1879.

1. THE establishment of a *State Board of Health in Rhode Island* appears to have been another of the beneficial results arising from the International Medical Congress held in Philadelphia in 1876, and in accordance with a resolution then and there adopted and transmitted to the governors of all the States and of the Canadian provinces. A history of the inception and establishment of this important portion of the machinery for securing that great object of all right government—the greatest good to the greatest number of those governed—is prefixed to the report, and should be carefully studied by physicians and legislators engaged in elaborating similar plans for sanitary improvement. The chairman of the legislative committee, to whom the project was referred, submitted a paper in which he calculated that, out of 4116 individuals

who died in the State of Rhode Island during 1876, at least 3500 were in the effective or expectantly effective period of life, and had an average public value of $500 each. He then estimated that the lives of five per cent. of these, or 175 individuals, representing a money value to the community of $87,500, might be saved annually by sanitary care, and, adding to this $236,000, which might be saved by prevention of non-fatal illness, pointed out that the very large total of $323,500 might be annually economized to the State "by such measures as could be put into effective operation through the agency of a judicious board of health." The cogent argument contained in this exhibit of wasted lives *and* wasted dollars, with other considerations advanced with equal ability, resulted in the passage of an act authorizing the Governor to appoint six persons (three of whom must be physicians), serving without compensation, except the secretary, who was allowed $1200 per annum.

The objects of the board were judiciously furthered by the publication of public health tracts, the first giving practical sanitary hints in regard to avoidance of accumulations of filth, the use of disinfectants, ventilation of sewer pipes, contaminated well water, uncleanly cellars, etc.; and the second, urging methods for the restriction and prevention of scarlet fever, diphtheria, smallpox, and other infectious diseases.

An important part of the work of the State Board, and one in which it continued the good service of a cattle commission which preceded it, has been the effort to control and stamp out, if possible, that dangerous contagious disease, glanders or farcy. Stringent regulations were adopted against allowing glandered animals to be led along a public street, or to be kept with other horses, and the provisions by which these ordinances were enforced are well worthy of attention. The whole subject is one which has been too much neglected throughout the country.

2. The *State Board of Health of Kentucky* owes its existence to an act which is an almost verbatim transcript of the board of health law of Michigan. The board has a general supervision of the interests of the health and life of the citizens, and also advisory functions in regard to the location, drainage, water supply, disposal of excreta, heating, and ventilation of public institutions or buildings, and is directed to recommend from time to time works on hygiene for the use of schools of the State.

Beside the County Reports on mortality and short papers on poisonous baking powders and contamination of water supply—the latter a valuable contribution by W. B. Rodman, M.D., of Frankfort; the bulk of the volume is made up of articles in regard to the yellow fever epidemic of 1878. Among them the most complete seems to be that from the pen of Pinckney Thompson, M.D., of Henderson, Chairman of the State Board of Health, and from it we learn that the fever prevailed chiefly at Hickman, but also appeared at Bowling Green, Fulton, and Louisville.

The poison of yellow fever seems to have been introduced about the first week of August, either from that floating pestilence reservoir, the steamer John D. Porter, or from the steamer Golden Rule. Three men from the Porter came to the wharf, and one of them went up to the telegraph office in the town. The vessel itself did not approach the landing, and only lay in the Mississippi River opposite Hickman for about half an hour, but the important statement is made that "a strong southwest wind was blowing at the time, passing over the boat to the town." Dr. Thompson describes the existence of the three great factors for the development of yellow fever, viz., abundance of effluvia from vegetable and animal decomposition, moisture, and a mean temperature above 81° F. as existing especially in the low-lying portion of the town called Old Hickman, and believes the fourth factor, the specific yellow fever poison or germ, was supplied from the steamer John D. Porter, as above related.

Two hundred and sixty-two whites suffered from yellow fever in Hickman during this epidemic, and of these 132 died. Of 200 negroes who were also attacked, only 17 died.

3. *The Report of the Board of Health of the City of Nashville* is an attractive volume, well printed on fine tinted paper, and handsomely bound in such a way as to present a most agreeable contrast to the impecunious and severely utilitarian aspect common to board of health reports. The source of this astonishing prosperity is revealed in the letter of Dr. J. D. Plunkett, President of the Board, in which he states that "the same public spirited citizen who enabled us to bring out the last report in handsome guise, has again added to our resources, so as to enable us to get out a volume which is truly a practical public health manual."

The list of contents is headed by a long, able, and interesting Report on Sanitary Progress in Nashville with mortuary statistics for 1877 and 1878, by J. Berrien Lindsley, M.D., Health Officer. This article, without offering any important novelties in hygienic experience or investigation, presents in a very readable form some of the best conclusions obtained by sanitarians elsewhere, and is replete with intelligent suggestions for their practical application to the local conditions met with in the city of Nashville. Dr. Lindsley also contributes a valuable essay on the Mental and Physical Hygiene of the American System of Public Schools, which, although written with special reference to the city of Nashville, is well worthy of study by every one engaged in the education of our youth.

Alexander Winchell, LL.D., Prof. of Historical Geology and Zoology in Vanderbilt University, contributes a good paper on the Sanitary Geology of Nashville, concluding from his investigations that the geological situation of the city is favourable for the introduction of a cheap and efficient system of drainage and sewerage.

> "The copious springs which break forth in so many localities may be admirably utilized in giving efficiency to the sewage system, but these waters are strongly mineralized, and are generally exposed to inevitable pollution by human agency. The river, on the contrary, supplies a soft and wholesome article of water, whose use ought to displace that of the springs, even if compulsory legislation must be resorted to. The wells of the city ought also for similar reasons to pass into disuse."

In his article on trees and shrubbery adapted to the soil and climate of Nashville, Dr. August Gattinger presents a well-arranged popular description of the arboraceous and herbaceous treasures of Tennessee, and an earnest plea in favour of shade trees and plants in urban districts. The author of this essay, as an evolutionist philosopher, must certainly have studied the doctrine of the correlation of forces, and we are therefore surprised to find him indulging on p. 157 in the loose expression, "surfaces covered with vegetation annihilate heat, so to speak, in proportion to the mass of the vegetation."

The remainder of the volume is chiefly occupied with an account of Nashville during the yellow fever epidemic, also by Dr. Lindsley, the Health Officer, which is especially instructive as a detail of the satisfactory results from this city's noble invitation to the terror stricken refugees, flying in panic from the fever districts of the Southwest.

4. *The Report of the Board of Health of Louisiana*, comprising as it does the time and place of outbreak of the terrible epidemic of yellow fever which devastated so many of the States bordering upon the Mississippi River, is of eminent importance. As however our readers are doubtless familiar with the mournful details of this history, we need only touch upon a few of the salient or still debatable points here set forth.

The President of the Health Board, Dr. Samuel Choppin, in his introduction, claims that further investigation has only confirmed the opinion that the germs of yellow fever were introduced into New Orleans by the steamship Emily A. Souder, which arrived on the 22d of May.

In reference to quarantine Dr. Choppin declares that—

> "With regard to the efficacy of a strict quarantine, the epidemic of the present year goes to sustain the theory of importation and portability of yellow fever. Witness Galveston, which has not developed a single case; witness Shreveport, Monroe, Louisiana, Natchez, Miss., with their shot-gun quarantines turning away the pestilence. There must be no mediocrity in the organization of a quarantine. If it does not interpose an insurmountable barrier between the healthy and infected localities, it is worse than useless."

In connection with the subject of out-door disinfection, which was tried on a large scale with 3 per cent. solution of carbolic acid (Calvert's No. 5) he admits its want of success, endeavours to explain this failure, and contends that for closed spaces or apartments sulphur fumigation is applicable, and there is good reason to believe that its thorough use is effectual in destroying the yellow fever infection.

The bulk of the book is made up of minute reports from the sanitary inspectors of the seven districts into which the city of New Orleans is divided. These records give in detail the facts upon which the generalization already referred to are founded. It is not therefore necessary for us to review them separately, and we will content ourselves with the following indignant protest from Dr. Joseph Holt of the Fourth district in regard to the pauper burying-ground, the condition of which must go far to account for the dread in which strangers hold the poisonous atmosphere of New Orleans during the summer months.

> "This is now the potter's field, a low marsh wherein the sexton performs his heavy task faithfully and as best he can, sometimes floating to their graves the dead, and weighting them into their homes, the whole graveyard being often a foot under water. The nature of his field renders it impossible for him to dig these graves deeper than has been his habit. But this is Potter's field; an injurious infliction and an outrage upon the living, a disgrace to our humanity, to our morals, and to our city; an indecency perpetrated upon the dead, *because they died poor!*"

5. *The Annual Report of the State Board of Health of Minnesota* is a comparatively brief record of the sanitary work, but is sufficient to show that much public benefit can be secured by even a small pecuniary expenditure. According to the general report of Dr. Chas. N. Hewitt, Secretary, smallpox had during the year twice obtained a foothold in the State, namely, at Mankato, and at Fisher's Landing, and assistance being called for, aid was furnished just over the boundary to the neighbourhood of Grand Forks, D. T. The outbreak in Mankato was traced to a couple of unvaccinated children from Port Washington, Wisconsin, who had been

held on the lap of a man, (?) returning from visiting a friend ill with smallpox. The attending physician did not recognize the disease as variola for about two weeks, and then attempted to keep it a secret, of course without success. From the house in which these two children were ill the contagion was traced to 25 different cases in ten different houses, but the further spread of the malady was prevented by careful vaccination and re-vaccination. The epidemic at Fisher's Landing originated from a woman who brought the disease from Manitoba, Canada, and it was promptly checked by vaccination.

Dr. E. J. Davis briefly reports upon vaccination with animal virus in Blue Earth Co., but as he fails to tabulate the results, his paper is not so valuable as it might have been made. It appears, however, that thirteen out of fifteen physicians employing animal vaccine prefer it to humanized virus, and that no fatal results occurred in 3104 cases.

An elaborate essay on Diphtheria, prepared by Dr. Franklin Staples of Winona, occupies about fifty pages of the report, and is worthy of careful study, since the material for observation appears to have been unfortunately amply abundant. The method adopted was the usual one of issuing circular letters of inquiry. Dr. Staples' general conclusions are:—

> "1st. Diphtheria often originates spontaneously where contagion is impossible. Sporadic cases, some of which have occurred in almost every locality in the State, have generally originated in this manner, as well as have the first cases in many local epidemics. 2d. The fact most clearly proved by our investigation, and which has been illustrated by a large number and variety of cases, is that of the infectious and contagious character of this disease."

The most marked epidemic of diphtheria during 1878 was at Mankato, where it was studied by Dr. Staples. It began in July and continued until the end of the year, attacking about 350 persons, of whom nearly 14 per cent. died.

Short articles on the "water survey of the State," "on dust fires and explosions," as occurring in flour mills, etc., "on yellow fever" and "on the meteorology of Minnesota," occupy the remainder of the volume, which concludes with a paper by the Secretary, Dr. Chas. N. Hewitt, on school hygiene. In this Dr. H. gives a good formula for the systematic examination of school children, which might be generally introduced into our educational establishments with advantage.

6. From the report of the permanent secretary of the *State Board of Health of California* we learn that gratifying evidence of an improved sanitary condition of the State, "especially observable in the mortality by zymotic diseases and among the infantile population," is afforded.

A large part of the remainder of the volume is devoted to the questions of water supply, sewerage, baths, and bathing. In speaking of the latter subjects, Dr. Stout warmly advocates the magnificent project of supplying San Francisco and other intermediate towns with the crystal water of Lake Tahoe, which is said to be unsurpassed in excellence and unfailingly abundant. With this suggestion realized, Dr. Stout thinks that the munificent bequest of $150,000 from Mr. James Lick could be advantageously applied to its benevolent object of furnishing free baths to the lower classes of the population. J. G. R.

Art. XLII.—*A Treatise on the Science and Practice of Midwifery.* By W. S. Playfair, M.D., F.R.C.P., Physician Accoucheur to H. I. and R. H. the Duchess of Edinburgh; Professor of Obstetric Medicine in King's College; etc. etc. Third American edition, revised and corrected by the Author. With Notes and Additions by Robert P. Harris, M.D. 8vo. pp. 655. Philadelphia: Henry C. Lea, 1880.

The first edition of this work received a somewhat extended notice in the number of this Journal for January, 1877, and the appearance of the second edition was chronicled in January, 1879. The third edition, so soon following, shows that the good qualities of the book have been recognized by the profession. It is, however, the third edition for this country only. The second American has been exhausted before the second English edition, and this is, therefore, especially prepared and revised by the author for this country; a fact which ought to be satisfactory as to the profession here being furnished with the latest word upon all subjects pertaining to obstetrics.

There are, of course, no great changes to be made in a book within so short a period as a single year. We find the most important addition to be a chapter upon the operation of gastro-elytrotomy, and this is but little more than an abstract of the papers of Dr. Garrigues, of New York, to whom due credit is given. The author's opinion as to the operation is that, from results already attained, it "has a great future before it, and that it will be the duty of accoucheurs to resort to it instead of the more hazardous Cæsarean section, unless some special contra-indication exists." And, "if further experience proves that the practical difficulties of the operation do not stand in the way of its adoption, Dr. Thomas will have introduced, by his able advocacy of the operation, probably the greatest improvement in modern obstetrics."

The American editor has, in this, added to the statistics of the Cæsarean section given in the second edition, and has shown himself to be a most indefatigable and pains-taking case hunter. The figures presented are but of minor value, however; it is the lessons which they teach, which are of prime importance. In this respect, the doctrine that British experience should not guide American practice in this operation, for reasons given, and which we believe to be sound, and the immense influence as to the mortality, of the *time* at which the operation is performed, are of the highest value. They are important and valuable contributions to our professional knowledge made by Dr. Harris. J. C. R.

Art. XLIII.—*Sore Throat: its Nature, Varieties, and Treatment: including the connection between Affections of the Throat and other Diseases.* By Prosser James, M.D., Lecturer on Materia Medica and Therapeutics at the London Hospital, Physician to the Hospital for Diseases of the Throat and Chest, etc. Fourth edition. 12mo. pp. 318. Philadelphia: Lindsay & Blakiston, 1880.

To most readers it would be trite to offer, at this late date, criticisms upon a book which has passed so quickly and successfully to its fourth edition as the one before us. The mere fact indicates that it has proved acceptable to the reading part of the profession, and that it has been impressed with the seal of professional approbation. The reviewer's task thus becomes one rather in name than in reality. He seeks alone for that which is new; for the modifications and improvements of successive issues.

Dr. James's commendable energy in keeping his work well abreast of the times in all its departments renders the search, in the present instance, no fruitless one. A thorough revision of the earlier text, some alterations for the better in the general arrangement of the body of the work, a condensation of unimportant material, and an expansion of many passages in which a more thorough expression of opinion and fact have been found desirable, together with numerous fresh paragraphs, the insertion of several sections upon topics of interest, and four entirely new chapters upon the subjects of syphilitic sore throat, affections of the naso-pharynx, the connection of sore throat with affections of the nose and ears, and diseases of the œsophagus, lead us to believe that the author's hope of greater completeness, associated with increased usefulness, has been realized through his added labours.

The general scope of the work will be remembered. Opening with a short but succinct description of the anatomy of the throat, a term which is here used collectively, the anatomy and physiology of the mucous membrane are carefully considered, and afford, to the reader who has gone over the ground, an advantageous stand-point from which he may intelligently glance at the general pathological conditions comprised in the phenomena of congestion and inflammation, with their sequelæ, as exemplified in the various forms of sore throat, both pharyngeal and laryngeal, that are in turn described, in more or less detail, as follows: catarrhal, inflamed, relaxed, follicular, phlegmonous, gangrenous, exudative, fungous, specific, including syphilis, tubercle, and cancer, exanthematous, the account of which is of special interest, involving many questions as to the relations existing between skin diseases and sore throat; and, finally, non-inflammatory affections, under which heads are included hyperæmia, anæmia, degeneration, hyperæsthesia, paresis, spasm, wounds, etc. Surely a very complete category. Having been told the nature and varieties of sore throat, the reader is instructed in a very practical chapter how a diagnosis may be made; and as this involves the use of both the laryngoscope and rhinoscope, a concise exposition of the art is given, which can certainly be read with interest by those even well versed and well practised in it, and studied with profit by the beginner. If we follow the author now, in his plan, we pass to the perusal of some chapters in which he considers the organs of the throat individually, and the special affections of the soft palate and uvula, the tonsils (an interesting article including the question which he raises concerning the sympathy existing between the tonsils and ovaries), the pharynx, the naso-pharynx, and, finally, the larynx receive, each in turn, special consideration, the only fault of which is that it is too often superficial in parts, and that the relative importance of the subjects has not been, in certain instances, appreciated, some receiving more attention, we hold, than their importance demands or our present therapeutical knowledge warrants, while others—to-day better understood, or of more interest to the practitioner—are dismissed with but few words. Not to be hypercritical, we can state with fairness, however, that this part of the work is certainly practical and well written, and, for those who have other sources of reference, will constitute a good addition to their working library.

If we turn to the newer chapters, the same views must of necessity be held; they are essential, with one exception, to the completeness of the manual, therefore we are glad that they have been added. But their treatment at the writer's hands is marked by the same defect as prevails in many of his earlier ones; they are too superficial, and his statements in certain instances are not marked by that depth of reflection, and a careful weighing of fact against theory and unproven assertion, that we have a right to expect from so well known an author. The chapter on affections of the œsophagus might well have been omitted from a work on "Sore throat." Not even the wildest stretch of the imagination can properly include a stricture, dilatation, or hypertrophy of this tube under the former term. The author himself states that the gullet is "an organ which many will think is scarcely included in the word throat." Why then do it?

The subject of "stammering of the vocal cords" is one with which Dr. James's name is very properly identified, and the pith of his communication upon this "hitherto undescribed laryngeal lesion," as submitted to the British Medical Association in 1879, is given in the work before us. As it is new and of interest, as well as of importance, we may be pardoned for dwelling upon it somewhat *in extenso*. It is regarded as a disease which seems to be due to a defect in the power of co-ordinating the intrinsic muscles of the larynx; the vocal apparatus, in other words, fails at intervals to carry out the behests of the will, and the result is sudden interruption of the voice, while the articulating power may remain unaffected. To use the author's words:—

> "As, in the generally recognized impediments of speech, the harmonious action of the groups of muscles engaged in articulation is disturbed; so in the vocal derangement I have discovered there is an analogous laryngeal motor disturbance. The disordered co-ordination which so commonly interferes with the utterance of syllables may disturb the production of voice only. Thus we see the movements required for producing syllables perfectly performed, while the vocal sound is at intervals suddenly arrested. There is an intermittent momentary voiceless condition. This may cause the patient to stop speaking, or he may continue a sentence from which some words are lost to the listener."

The sudden interruption of the function of the vocal cords in such cases is most difficult, according to Dr. James, to demonstrate. It is very unlikely to occur during the utterance of such sounds as are usually emitted in laryngoscopic examinations. One has to watch for a long period and to devise special methods (just what is not stated by the author), before obtaining ocular demonstration of it. Isolated sounds, he tells us, in the most confirmed stammerers may be correctly articulated; so also in these vocal impediments the patient can emit separate notes. But now and then with certain combined sounds rapidly produced in succession, a sudden hesitation or temporary arrest of laryngeal movements will occur,—the vocal cords hesitate or tremble for an instant at a point not sufficiently approximated for vocalization, where they move as with a series of ineffectual efforts to obey the will, or display the paroxysmal, spasmodic, or irregular actions seen in the mouths of confirmed stammerers, or the less distinct interferences with utterance called "hesitation of speech." Dr. James then believes "that most of the derangements commonly grouped under the expressive term 'impediments of speech' may henceforth be said to have their counterparts in similar vocal impediments occurring within the larynx."

This statement is certainly an interesting one, and Dr. James is entitled to the credit of formulating and demonstrating a proposition which, though it has received the dissent of Mr. Holmes and in turn been upheld by R. Locke Johnson, of London, and upon this side of the water has created some comment, is undoubtedly correct.

We cannot close this notice without referring to the plates which preface the book, and of which we are told, they are "engraved on copper and coloured by hand." With this impressive announcement we turn to them with an impending sense of artistic gratification, and are struck with wonder—wonder at what they are intended for. They certainly fail to convey to us even a feeble idea of any throat affection with which we are acquainted.

The paper, type, and presswork are creditable to the publishers, and the addition of a copious index will add to the usefulness of the present edition. G. M. L.

ART. XLIV.—*The Spectroscope in Medicine.* By CHARLES A. MACMUNN, A.B., M.D. Univ. Dub. 8vo. pp. xiv., 198. Philadelphia: Lindsay & Blakiston, 1880.

IN his preface the author states that the spectroscope seems likely to be of almost as great use in medicine as it has already proved in terrestrial, solar, and stellar chemistry, and that the objections to its employment have depended upon erroneous ideas of the difficulties in the use of the instrument. Such ideas, he says, have arisen from a want of a simple treatise on the subject, and this much-needed work he now claims to have laid before us. Using the word medicine in its most extended sense, we might accept the title of the book, but spectrum analysis, even as here elucidated, is applicable to the investigations of the physiologist and medicolegal expert, not to the practice of the physician.

The subject is introduced by a brief explanation of the principles of optics involved in spectrum analysis, and a description of various forms of spectroscopes and micro-spectroscopes. The bright-line spectra are recommended as a means of identifying the mineral constituents of the ash of animal matters; except for the detection of minute traces of rare metals, most chemists would prefer the usual chemical tests. Reynolds' spectroscopic method for the detection of metallic poisons is given in two pages in quotation marks. The analysis of morbid gases is made by examining the spectra of the gases, inclosed in Geissler-tubes under diminished pressure. Very truly, as Mr. MacMunn quotes from Thudichum, must it "be left to the future to decide how far these spectra can be practically utilized in the diagnosis of gases which occur in the animal economy."

Dr. Bence Jones's experiments on the chemical circulation in the body are given in seven pages, all quoted. The researches of Vogel and of Sorby on the identification and distinction of "physiological absorption spectra" are studied, for the most part, in the words of the investigators, after which follow some general directions for the examination of absorption spectra, with especial reference to the detection of blood. The author explains at some length why he thought at one time that the detection of reduced hemoglobin in the blood of the right auricle and right ventricle was a proof of the viability or non-viability of the fœtus, and why these views are not tenable. The results of Thudichum's researches on hematin are given in five quoted pages. Hoppe-Seyler's hematin without iron is stated to be identical with Thudichum's cruentin, although the latter contains 1.51 per cent. of iron. A list of twenty-seven acids, of which Preyer studied the action on hematin, is given without explanation. Of what interest to the profession can it be to investigate the action of hydrochloric acid and tin, or of phosphorus chloride containing free phosphorus, on hematin? The first reaction produces hydrobilirubin, as shown by Hoppe-Seyler, but the author seems to have overlooked this fact.

The author distinguishes a great many kinds of hematin, the distinction depending upon the various absorption spectra of hematin under different conditions, the principal condition being *the amount of chemical action on hemoglobin.* We might so produce a thousand bodies from two, considering each phase of one molecular vibration as a new compound.

The detection of blood pigment in urine can only be effected by aid of the spectroscope, and this method is well set forth, thus, "hold the vessel containing it between the eye and the source of light, and examine with an ordinary pocket spectroscope; if it contain blood, two dark bands are visible" in the yellow and green.

Hematin was detected in three specimens of paraovarian fluid and one of ovarian, out of five. These fluids were subjected to quantitative analysis, the results being given. It is stated that the spectroscope will thus "enable the contents of ovarian and parovarian cysts to be diagnosed from other fluids resembling them, in many cases," but that it "will not enable parovarian to be distinguished from ovarian cysts." Are the contents of all these cysts constant? The author fails to make this point clear.

Considerable space is devoted to a description of Sorby's method for the detection of blood stains. The method of Dr. J. G. Richardson is also quoted, from the *Microscopical Journal*, but although Dr. Richardson succeeded in detecting a much smaller quantity of blood than Mr. Sorby, the author advises "those who are engaged in such research to follow Mr. Sorby's advice, as his methods were arrived at after prolonged and careful study." Mr. MacMunn thinks that Dr. Richardson "goes wide of the mark, as he has to bring in the aid of the microscope," but what does Mr. MacMunn do when he brings the smell of burnt feathers as a test for an albuminoid body and the quantitative analysis of serous effusions into a book on the spectroscope?

A very poor general chemical sketch of the bile is given, after which Mr. MacMunn gives a description of the spectra of the bile of seventeen animals, as studied by himself. We suppose the exact application of these facts to medicine will follow in another volume.

Directions are given for the examination of Gmelin's reaction and Pettenkofer's reaction by the spectroscope; most physicians will be satisfied to make them in test-tubes. The author is very positive that urobilin exists in normal urine, but Hoppe-Seyler, who carefully studied this point, came to the conclusion that normal human urine contains no urobilin. MacMunn says, indeed, that it may sometimes be absent in disease, but that he does not know in what disease. "We may believe that what have been supposed to be the true colouring matters of bile and of urine are not such, but probably a mixture of several substances." Can we include in this case bilirubin, which occurs in well-defined crystals, and indican, which is easily extracted from urine?

The book is largely made up of quotations, the author having a happy manner of stating, "—— is so explicit on this point that I cannot resist quoting him." It contains three very well-executed chromo-lithographs, mapped and drawn by the author; these, and the extended bibliography at the end of the book, will make it serviceable to those engaged in physiological research. The descriptions and explanations are not well balanced; more care and thoroughness would have resulted in a more valuable addition to the literature. W. H. G.

ART. XLV.—*Minor Gynecological Operations and Appliances, for the Use of Students.* By J. HALLIDAY CROOM, M.B., M.R.C.P.E., Lecturer on Midwifery and Diseases of Women at the School of Medicine, etc. 12mo. pp. 106. Edinburgh: E. & S. Livingstone, 1879.

THIS little volume was prepared as a class manual, or syllabus, and intended chiefly for Dr. Croom's own clinical students; it therefore makes no pretensions to be other than a book for beginners, designed to instruct them in diagnostic characteristics and appliances, and minor gynæcology. The book opens with seven excellent plates of the common maladies of the os and cervix uteri: and then passes on to teach how to examine a patient per vaginam, explaining the anatomical characters of all the parts, external and internal, the bimanual method of exploration, and giving in outline the diseases to which the vulva, hymen, vaginal walls, cervix, os uteri, uterus, and ovaries are liable. These are mainly in the form of heads, to be completed from larger works. The author then treats of examination of and by the rectum, giving valuable hints as to method and usefulness. Chapters are devoted respectively to the *speculum*, and its value in exploration; the *sound*, its contraindications, what it teaches, its capabilities, and mode of use; the *tent* and its use, with mode of introduction; the *female catheter*, and what it teaches; *dilatation and exploration of the bladder*, with treatment by injections; *vaginismus*, *vaginal diseases* and the douche; *pessaries*, *cervical applications*, *intra-uterine applications*, *the curette*, and *the hypodermic uses of ergotine.* The book teaches what ought to be studied, rather than the minutiæ to be learned, and is chiefly valuable as a syllabus, to direct the student in a course of studies. R. P. H.

ART. XLVI.—*Cancer of the Rectum, its Pathology, Diagnosis, and Treatment.* By W. HARRISON CRIPPS, F.R.C.S., Surgeon to the Great Northern Hospital, etc. 12mo. pp. viii., 191. London: J. & A. Churchill, 1880.

THIS monograph deals with a subject of such paramount importance that it would be of interest to the profession if its value were much less than it is; but the author has given the result of such pains-taking and accurate work that he has produced a volume which should be read by every surgeon who treats rectal disease. After stating his opinion that cancer is not of constitutional origin, but that the starting-point lies in some local condition of the part attacked, he discusses the anatomy of the rectum in health. The thirty pages constituting the chapter on the pathology of the disease, and the short chapter on the method of extension show careful and patient microscopic work of great value, and are undoubtedly the most interesting chapters of the book. Though all may not agree with the author's conclusions, the description of the beautiful illustrations of microscopical sections, and the simple and intelligible manner in which he places his facts before the render, deserve the highest praise. In truth, the volume is remarkable for the interest of this portion of the subject. He says that the chief characteristic in malignant disease of the rectum is, in nearly every case, a development of gland tissue in an abnormal situation; and he therefore prefers to use the term adenoma as better expressing the real nature of the growth, than the word cancer (pp. 48, 49). By gland tissue, however, is not meant structures similar to lymphatic glands, but like the lenticular or Lieberkühn's follicles of the large intestine. These adenoid growths may well be divided according to their degree of development into, 1, the embryonic adenoid disease, and, 2, the true adenoid disease; of which classes, the former includes the malignant diseases described as the varieties of sarcoma and cancer, while the latter is represented by the papillomata or villous tumors. There is no sharp line of demarcation between these two, which should be considered as representing two opposite types of a common disease.

In considering the symptomatology and diagnosis of rectal cancer, he states that pain is greater when the disease is located in the prostatic and anal region than when it has its seat higher up in the bowel. Another statement of importance is that the sudden occurrence of complete obstruction is at times the first symptom causing a suspicion of rectal cancer. This obstruction is sometimes explained by the pressure of the feces above the disease causing invagination of the diseased portion into the intestine below. Some attention is given to the differential diagnosis of cancer from villous tumor of innocent kind, polypus, and ulceration. The chapter on the "Surgical Anatomy of the Rectum" discusses especially the distance of the peritoneal pouch from the anus. One of the methods by which he obtained this measurement was by injecting the peritoneal cavity with plaster of Paris, and then thrusting a needle through the perineum until it struck the plaster. The peritoneal pouch, it is said, can scarcely be dragged down by pulling on the lower end of the rectum. This is doubtless true. When the rectum, on the other hand, has been enucleated from its surroundings and pulled upon, its tortuosities are effaced, and the peritoneum is then two or two and a half inches further from the anal end of the intestine than it was when the parts were undisturbed. This point has been fully discussed recently by Roberts, and is deserving of considerable thought in operations upon the rectum.

The author considers the treatment of rectal cancer in an unprejudiced manner, advising palliation, colotomy, or excision according to the condition of each individual patient. In cases where excision is improper, relief from pain is often obtained by colotomy, which prevents the passage of feces over the ulcerated surface. In certain instances, however, no relief is obtained by this measure, because the pain is not due to irritation of an ulcerated surface, but to pressure of the growth upon surrounding structures. The history given of excision of the rectum, or extirpation as it was usually called until quite recently, is very imperfect. No mention is made of Faget's successful case in 1739, which was probably the earliest operation, nor of Dieffenbach's thirty cases, many of which were successful. To Paget, Allingham, Holmes, and others is given the credit of reviving the operation in England, while nothing is said of the reason these operators were induced to undertake a procedure which was condemned by every one of the English authorities. Billroth's success in Vienna, Briddon's case in New York, and Levis's good results in Philadelphia, coupled with the encouraging results of Roberts's investigation of the subject,[1] undoubtedly impelled the writers of England to reconsider the denunciations they had poured upon the operation; still our author passes these facts as if unimportant, though the operation has probably been done ten times in the last three years where formerly it was done once. To the continent of Europe and to America this operation owes its resurrection, and not to the surgeons of Great Britain.

Mr. Cripps very properly thinks that but a small proportion of the cases coming under surgical observations are suitable for operation. This is in many instances due to delay in seeking treatment at the hands of those conversant with the operative treatment of the disease. He excludes as improper cases for excision, those in which the disease is located more than four inches from the anus, and those in which the rectum is not fairly movable upon the surrounding parts. In women, the anterior wall should not be involved farther than three inches. His usual method of operation is by a posterior incision through the rectal wall, after which the gut is dissected from its surroundings and excised by the wire écraseur. No dressings or sutures are applied, as they both obstruct free drainage, and the latter pull out so soon as to be of no service. Great cleanliness and frequent washing with carbolized solutions are points upon which stress is laid. This method of operating does not present any very apparent advantage over that recommended by Levis, who makes an effort to enucleate the rectal tube without splitting it in its long diameter. In either case the hemorrhage need not be profuse, for the vessels run longitudinally in the coats of the intestine, and the dissection is done principally by laceration.

The final chapters speak of the condition of the rectum after the operation, and the prognosis as to life and as to return of the disease, and give the history of some cases treated by excision. The results obtained are far better than would be expected by those unfamiliar with the operation. The mortality in selected cases is small, and the control of defecation after removal of so much of the rectum seems wonderful, if it be not remembered that normally the rectum is empty except just before the desire to go to stool is experienced.

The many virtues of the volume have been detailed, and it only remains to point out a few blemishes that have been observed. The author speaks of Morgagni as Morgani, and repeatedly of Lisfranc as Lefranc; the word chirurgerie (p. 163) would probably sound unfamiliar to our Parisian brothers. These are, however, more excusable than the expressions on page 49; "*an* inverted villi," and "the villi *is* merely the prolongation." These mistakes may be due to careless proof-reading, but the repetition of some of them renders this questionable. J. B. R.

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[1] Medical and Surgical Reporter, June 9, 1877.

ART. XLVII.—*Outlines of the Practice of Medicine, with Special Reference to the Prognosis and Treatment of Disease, with Appropriate Formulæ and Illustrations.* By SAMUEL FENWICK, M.D., Lecturer on the Principles and Practice of Medicine at the London Hospital, etc. 8vo. pp. xvi., 387. Philadelphia: Lindsay & Blakiston, 1880.

WHILE holding the Chair of Medicine at the London Hospital Medical College, it was Dr. Fenwick's custom to devote the last few lectures of each session to a short outline of the medical treatment of the various diseases which had been described during the course. He found that by so doing he was the better enabled to aid the thoughtful student in preparing for his examinations, and also that the plan served to call to the minds of the class what had been taught them in the wards of the hospital, and in the out-patient clinique. This plan seems to have been a popular one, and it is at the suggestion of some of his former pupils that these "Outlines of the Practice of Medicine" have been published. They are, their author tells us in his preface, essentially the same as the lectures just referred to.

In the first part of the book such general directions as are applicable to the treatment of disease in all its forms are briefly laid down. In the second chapter he describes such indications as present themselves in acute forms of disease; and in the third, those arising from pathological changes of a chronic nature. In the remaining chapters the separate diseases are considered in more or less detail, unnecessary repetition being avoided throughout the book by a lettered arrangement by which the general directions given in the first chapter may be readily referred to.

While admitting that the indications for treatment are fairly presented, and that the treatment recommended is that which has received the sanction of the highest authorities in therapeutics, we must say that the book belongs to a class we do not like, and which we think is likely to encourage superficiality in the student. It will unquestionably be useful to him in preparing for his examinations, but we fear that it will be more often the idle than the "thoughtful" student who will have recourse to it for this purpose.

Appended to the book are a large number of useful formulæ.

J. H. H.

ART. XLVIII.—*A Dictionary of the German Terms used in Medicine.* By GEORGE R. CUTTER, M.D., Surgeon of the New York Eye and Ear Infirmary. 12mo. pp. 304. New York: G. P. Putnam's Sons, 1879.

THIS little book is the outgrowth of its author's own needs. Having found, as many of us have also found, that the ordinary dictionaries were of little or no service in the study of German medical literature, he made it a habit to write down all the technical words he met with in the course of his reading, with their definitions appended, as soon as they were ascertained. In this way he soon accumulated a large amount of manuscript, which at last becoming so voluminous as to be cumbrous, he determined to have printed, not only for his own use, but for that of other students.

The author's reading appears to have been sufficiently extensive to enable him to make the work useful not merely to those interested in his own specialty, but also to the general practitioner. It seems to supply a want long felt, and to do this well. J. H. H.

ART. XLIX.—*A Manual of Auscultation and Percussion; embracing the Physical Diagnosis of Diseases of the Lungs and Heart, and of Thoracic Aneurism.* By AUSTIN FLINT, M.D., Professor of the Principles and Practice of Medicine, and of Clinical Medicine in the Bellevue Hospital Medical College, etc. etc. Second edition, revised. 8vo. pp. viii., 240. Philadelphia: Henry C. Lea, 1880.

WITH the exception of a few remarks which its distinguished author introduces in regard to a variety of respiration which he calls Vesiculo-cavernous Respiration, in which, as its name implies, the vesicular and cavernous qualities are combined in the inspiratory sound, and which occurs when a cavity is surrounded, not by solidified, but by healthy lung, there does not appear to be any important difference between this and the first edition of his Manual. It seems, therefore, only necessary at the present time to say that a further examination has confirmed the favourable opinion of it which we expressed in our issue for October, 1876.

J. H. H.

ART. L.—*A Text-Book of Physiology.* By J. FULTON, M.D., M.R.C.S. Eng.; L.R.C.P. Lond.; Professor of Physiology and Sanitary Science in Trinity Medical College, Toronto, etc., 8vo. pp. x., 416. Philadelphia: Lindsay & Blakiston, 1879.

ENGLISH speaking students of physiology are especially fortunate in the number and variety of text-books at their disposal, from the encyclopedic editions of Carpenter, Foster, and Hermann, to the various common-school primers. It is, therefore, natural that we should expect in any new work some striking originality in its conception or treatment of the subject as its "*raison d'être*," or extraordinary merit to enable it to supplant or even equal many of its well-known predecessors. In the work before us, however, with the exception of the probability of its having a certain sale among the students of "Trinity Medical College, Toronto," we confess that we have been unable to find any reason for its existence. It is common place in all particulars in spite of the author's "endeavour to supply a prevailing want in the ordinary text-books" by the insertion of some chapters on histology. Its defects and merits are equally unimportant; while the latter do not warrant its ambitious dedication to advanced medical students and general practitioners having students under their instruction, the former will not render it absolutely hurtful to those who are compelled to read it. R. M. S.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

Physiology of Reading.

M. JAVAL (*Annales d'Oculistique*, Novembre–Decembre, 1879), treats of the causes which render reading fatiguing. He considers them to be (1) the constant tension of accommodation, (2) the constant fixation of the eyes, and (3) the fact that books are written in black characters on a white ground. The eye is not achromatic, and therefore theoretically vision should be more distinct when one of the extremities of the spectrum furnished by the colour of the paper has been annulled. He would, therefore, seek a paper which should reflect blue and violet less strongly than the other colours. A yellow paper, manufactured from wood-fibre, best fulfils these indications. As regards myopia, the author considers it may be produced directly from reading too small print at an early age. He holds that the size of the print used should be strictly progressive with the age of the child and its skill in reading. Other things being equal, the legibility of any text depends not on the height, but on the breadth of the letters, and he would invoke legislative interference to compel schoolmasters to use only print of a certain fineness in the lower forms. Progressive myopia, he considers in many cases is due to the use of too strong glasses, and to the excessive length of lines in books and journals. In binocular vision, the movements of accommodation are extremely rapid and complicated, and are very much influenced by the length of the line over which the eye has to range. Eventually the myope has to move his head in reading, and this necessarily is really a great safeguard against the further progress of his myopia.—*London Med. Record*, Feb. 15, 1880.

MATERIA MEDICA AND THERAPEUTICS.

Quebracho, a Palliative Remedy in Dyspnœa.

Dr. PENZOLDT's discovery (*American Journal of the Medical Sciences*, Oct. 1879, p. 547) that various forms of dyspnœa can be alleviated by quebracho bark, receives confirmation from two recent writers in the *Berliner Klin. Wochenschrift*, No. 52, 1879—Dr. BERTHLOD, of Dresden, and Dr. PICOT, of Carlsrühe. By both, Penzoldt's extract (referred to in our former notice) was rigidly adhered to. Dr. Berthlod relates two cases of spasmodic asthma which were much benefited by the new drug. In the first the respirations fell after three doses from 64 to 30, with general improvement of the symptoms; in the second, where the asthma depended on emphysema, the effect was less rapidly produced; but the patient, who had been under Dr. Berthlod's care for four years, and who generally had to lie up for one or two weeks at the time of his attacks, was about again in five days. In a case of mitral incompetence and stenosis, quebracho relieved the severe nocturnal dyspnœa most decidedly; in two advanced cases of fatty degeneration of the heart it also did good, but digitalis had to be given for the relief of œdema, over which the quebracho exerted no influence whatever. Dr. Berthlod, however, from his small experience is inclined to regard the latter drug as indicated in cardiac disease when the pulse becomes irregular under the action of digitalis, and when orthopnœa continues after the digitalis has been omitted. In one or two cases of chronic bronchitis, and in several cases of phthisis in the latter stages, the drug proved unsatisfactory; in two patients with phthisis, however, it relieved the dyspnœa wonderfully. In one of these the respirations fell from 52 to 28 after teaspoonful doses of the extract every two hours.

Dr. Picot not only gave quebracho with good results to three patients with catarrhal pneumonia, bronchial asthma, and cardiac disease, dyspnœa being in each case an urgent symptom, but he experimented on himself with it as to its effect in diminishing shortness of breath in climbing hills. On three following days, the temperature and height of barometer remaining nearly unaltered, he ascended the same height in the same period of time. On the first day, without quebracho, his respirations rose from 16 to 42, his pulse from 64 to 94. On the second day, half an hour before starting, he took fifteen grammes of Penzoldt's extract, and reached his destination with respirations at 30 and a pulse of 80, feeling also in every way easier, as was further proved by his being able to smoke during the ascent, which he could not at all manage the day before. On the third day, without quebracho, his symptoms corresponded to those of the first day. He has also seen good results in two persons without evident organic disease, but liable to breathlessness in walking fast.

We must not omit to mention that, according to the *Wiener Med. Blätter* (No. 41, 1879), Professor SKODA, of Vienna, has not only found benefit himself from quebracho, but has prescribed it for others with success. It is possible that as an astringent in diarrhœa the resinous residue of the bark, which is only soluble in alcohol, may be of service. Dr. Berthlod noticing that the diarrhœa of a phthisical patient stopped while taking quebracho, has tried the resin in acute and chronic intestinal catarrh with good results. To children he gives 0.1 gramme in a pill, of which they take ten daily. English children, however, might object to the number prescribed.—*Med. Times and Gazette*, Feb. 14, 1880.

On the Relative Paralyzing Action of Atropia and Pilocarpine on the Heart.

Dr. SIDNEY RINGER and Mr. E. A. MORSHEAD have been making a series of experiments on the relative paralyzing action of atropia and pilocarpine on the heart (*Journal of Physiology*, vol. ii. No. 4) of the conclusions from which the following is a summary:—

1. Sulphate of atropia topically applied is almost as powerful a paralyzer of the heart as pilocarpine.

2. Atropia paralyzes either the excito-motory cardiac apparatus, or the cardiac muscle, or both these structures.

3. Extract of muscaria paralyzes the cardiac muscular substance and probably the excito-motory apparatus.

4. In part at least, atropia antagonizes the action of muscarin by possessing for the cardiac structures (excito-motory apparatus and cardiac muscle) a stronger affinity than muscarin, whereby atropia, a cardiac paralyzer, replaces muscarin, also a cardiac paralyzer: but atropia has a far weaker paralyzing action than muscarin; hence when atropia replaces muscarin in the cardiac structures, the powerful paralyzing effect of muscarin is replaced by the far weaker paralyzing effect of atropia, and so a heart weakened or arrested by muscarin becomes strengthened, or commences beating again on the addition of atropia.

5. Pilocarpine, which weakens or arrests the heart, also antagonizes the action of muscarin, which still more powerfully paralyzes the heart. We suggest the same explanation for this antagonism as for the antagonism of atropia for muscarin, namely, that it is due to chemical displacement. Pilocarpine having a stronger affinity for the excito-motory apparatus and for the muscular substance, displaces muscarin and substitutes its own weaker paralyzing action for that of muscarin.

6. Our experiments do not show that the antagonism between atropia and muscarin is not in part due to their antagonism on the inhibitory apparatus. In which case atropia, having a strong chemical affinity for the structures of inhibitory apparatus, displaces muscarin and substitutes its paralyzing action for the stimulant action of muscarin.

Effects of Long-continued Use of Chloral.

At a recent meeting of the Clinical Society of London, Dr. Farquharson presented the Report of the Committee appointed to ascertain what deleterious effects follow the prolonged and continued use of chloral in ordinary doses. It is stated that seventy special replies and three printed papers had been received in reply to nearly 1000 circulars distributed throughout the profession, followed a few months later by a second appeal, made public through the freely accorded medium of the medical press. Twenty-nine answers state that, after extensive experience of chloral in long-continued doses, no ill effects have been observed. Ten of these correspondents enjoy the special opportunities for observation afforded by asylum practice, and Mr. Curgenven, Dr. C. T. Williams, Dr. W. Squire, Dr. Buzzard, Dr. Clifford Allbutt, and others, furnish cases in which chloral had been regularly and beneficially taken for periods varying from two to ten years.

Before proceeding to analyze the replies received from those who had observed inconvenient effects to follow the use of chloral, the committee drew up a brief summary of what has already been recorded on the subject. Their special information has been arranged under the various headings of the schedule, thus:—*A. Nervous System.* Fourteen answers record cases in which nervous debility, mental enfeeblement, and convulsive seizures appeared to follow the use of chloral, Dr. Maudsley, Dr. Clouston, and Dr. Lindsay expressing themselves as strongly opposed to its employment in insanity.—*B. Circulatory System.* Two answers under this heading note some cardiac enfeeblement.—*C. Digestive System.* Six replies mention digestive disturbance as occasionally following the administration of alcohol.—*D. Cutaneous.* Nine correspondents give details of cases in which they observed itching of the skin, lichenous eruption, with deep flushing of face and head, following the taking of stimulants.—*E.* Two replies indicate the possibility of urinary irritation being produced by chloral.—Inquiry amongst some of the leading druggists of the metropolis has not established the probability that there is any remarkable abuse by the public of the facilities which they enjoy of purchasing for themselves any quantity of chloral. The drug, it may be mentioned, is not included by the Legislature amongst those the sale of which is guarded by the name and address of the purchaser being required to be registered by the vendor. In conclusion, the committee expressed regret that, in spite of repeated appeals to individuals generally and to the profession by circular, and through the medical press, they have failed to obtain any more definite information than that contained in the preceding report; and, although the opinions expressed by numerous gentlemen of experience will, doubtless, be received with the respect which is their due, the committee would have been glad if more facts, from which definite conclusions might have been drawn, had been placed at their disposal.—*Lancet*, Jan. 17, 1880.

Duboisia and its Therapeutic Use.

A slight degree of poisoning by duboisia produces in man the following phenomena: Dryness of the mouth and throat, dilatation of the pupil and accompanying it dimness of vision; when in a more advanced stage it is accompanied by cephalalgia, vertigo, and drowsiness, which may even deepen into a comatose stupor. The pulse is considerably quickened, it may range from 66 to 180 (Ringer). The skin is covered with a scarlatiniform eruption. Sometimes an extraordinary lassitude may be observed, an uncertainty in talking, and delirium.

In the experiments undertaken by M. FAUQUÉ (*Thèse de Paris*, 1879) a noticeable quickening of respiration was noted in animals, which was not observed with atropia. The central *nervous system* is then acted upon: thence come delirium and stupor. In the case of animals subjected to subcutaneous injections of duboisia a marked weakening of the excito-motor power follows. This weakness continues as long as access of blood to the member, which is being studied, is prevented. In exceptional cases tetaniform convulsions have been observed.

The action on the circulatory apparatus is shown by the acceleration of the heart-beat, but this is not observed in frogs. In these animals, contrary to what is produced in the case of dogs, there is a diminution in the heart-beat.

The secretion of sweat and saliva is considerably diminished. From this results the great dryness of the mouth and throat, observed in men and animals. There should be, according to M. Fauqué, a paralyzing action on the excito-sudoral nervous fibres, admitted by M. Vulpian.

Finally duboisia causes dilatation of the iris, and paralysis of accommodation, and seems to act by direct paralysis of the motor nerve-filaments of the ciliary muscles and iris. Besides, the action on the iris and the ciliary muscle is exercised independently; the iris remains paralyzed longer than the muscle of accommodation. Duboisia differs from atropia by the persistence and greater rapidity of its action on the muscle of accommodation.

Duboisia is indicated in all cases in which atropia acts badly. However, in two cases of iritis reported by Galezowski it has caused as much irritation as atropia.

M. Gubler has used it for the sweats of phthisis in the dose of 1 milligramme by injection. He has employed it in the same proportion to raise the number of pulsations, which had fallen to 40 in the case of a tuberculous patient, and as a calmative in a case of maniacal delirium. The hypodermic injection (1 part to 200) at the rate of two drops a day at the beginning is the most convenient mode of employment as a collyrium intended to cause mydriasis. M. Galezowski gives from 0.02 gramme to 0.10 gramme in 10 grammes of water at the rate of three to five drops a day. In cases of inflammation of the cornea from foreign bodies the following salve may be employed with advantage, placed under the eyelid morning and evening: Neutral sulphate of duboisia, 0.02 gramme; vaseline, 10 grammes.—*Revue des Sciences Médicales*, Jan. 1880.

Intravenous Injections of Milk.

Dr. DEMETRE-CULCER has studied (*Thése de Paris*, 3 Mai, 1879, No. 217) experimentally the effect on animals of intravenous injections of milk, which have been proposed and practised by Hodder and Thomas on man; he maintains that these injections are dangerous and cause emboli. The following are the conclusions arrived at by M. Culcer:—

1. The artificial introduction of milk into the circulatory system is far from being as harmless as the assumptions founded upon certain analogies, noticeably the analogy with chyle, would tend to attribute to it.

2. The *quantity* of milk, all other things being equal, introduced by intravenous injections, appears to exert an actual influence upon functional phenomena, more or less grave, caused by this introduction.

The experiments tend to prove that in the case of a dog of medium size and weight of 12 kilogrammes, we cannot, with impunity, introduce into the circulatory system in the physiological condition a quantity of milk, exceeding at least that of 100 grammes.

3. As regards the *quantity*, the effects produced by intravenous injections of milk absolutely resemble those which result from the intravenous injection of water, and in both cases the effects proceed principally from the modifications of the blood, and from the more or less dissolving of the colouring matter of the blood globules.

4. The symptoms caused by intravenous injection of milk, and which may prove mortal, with tolerable rapidity, in the preceding experimental conditions, appears to be due essentially to the formation of emboli, by the milk globules in the capillary vessels in the greater part of the viscera, notably in the respiratory organs and in the myeloncephalon (rachidian bulb).—*Bull Gén. de Thérap.*, Jan. 30, 1880.

MEDICINE.

The Treatment of Leucocythæmia.

Dr. ALFRED CARPENTER read a paper at a recent meeting of the Medical Society of London on the treatment of leucocythæmia. He pointed out that there was something wanting in the present plan of dealing with therapeutics, inasmuch as members of the medical profession are continually trying processes for the cure of diseases which have been shown to be useless, and that text-books continue to recommend medicines which have never done any good. He then gave the history in general terms of two cases of leucocythæmia which he had met with in private practice, and in which there were singular symptoms, one being associated with intense neuralgia, the other with recurring priapism. The neuralgic case was treated by means of iron, stimulants, and narcotics. In the opinion of the author the remedies only increased the intensity of the pain. He always found that the internal as well as the cutaneous administration of narcotics left the patient more sensitive after the effect of the dose had disappeared, and that they were useless in arresting the course of the disease. He entered a protest against the cutaneous administration of narcotics as only another form of intoxication, and he objected to medical men making themselves parties to so reprehensible a practice. He had found iron and stimulants unable to arrest the course of leucocythæmia, and he urged that their use was only a waste of time. The second case was treated by means of bromide of potassium, iron, quinine, and turpentine. The priapism had recurred at regular intervals for some time; it had not been controlled by any of the ordinary remedies used, but it seemed to be mastered by the use of galvanism.

He deduced five points as worthy of record, and which the author considered to be in a great measure proved by the results of this case (fortified as they were by his experience in the treatment of others). Point 1 was that bromide of potassium did not arrest the course of the disease, and had no effect upon the enlargement of the spleen in this disease. Point 2, that quinine did not have any beneficial effect in leucocythæmia, and it seemed by this result to separate the disease entirely from those affections of the spleen which are associated with malaria; that even in the large doses which were given for nineteen days—viz., twenty-grain doses three times daily—there was no reduction of temperature and no decided alteration in the course which the disease took, the daily rise of temperature being the same as before quinine was administered. The 3d point, that the hemorrhagic tendency (which is one of the symptoms of the disease) was not in any way arrested by the use of perchloride of iron. Point 4 was shown in the inability of turpentine to stay its progress, which seemed to show that iron and turpentine would be beneficial in those cases in which the blood had not altered from its natural state, but that both were useless in conditions such as arose in leucocythæmia. The 5th point was that aperients were worse than useless.

The author concluded by pointing out the possible connection between the disease and eczema. All the cases he had met with had been preceded by that disease, and he asked members of the Society to give a good trial to arsenic in any cases which might come to their notice, and to publish the result, but not to waste their energies in using bromides, quinine, salicin, iron, turpentine, stimulants, or narcotics.—*Lancet*, Jan. 31, 1880.

Aconitia in Neuralgia.

The affections known under the general name of neuralgia, which are so painful, and in the majority of cases so difficult to treat, have for a long time been the subject of constant investigation at the hands of a number of experimenters. Clinical experience has recently demonstrated the powerful anti-neuralgic action of crystallized aconitia, and the excellent results which have been obtained by the use of this remedy in the hands of Dr. OULMONT have fully confirmed the opinions in regard to it which have been already advanced. Aconitia, says Dr. Oulmont, is perfectly successful in such forms of facial neuralgia as are not correlated with other lesions, which are not intermittent, and which have not a well-marked recurrence; in other words, in those forms to which M. Gubler has applied the term congestive, and which are most frequently caused by exposure to cold. In such cases aconite produces a rapid cure within two or three days. Dr. Oulmont has even seen a case of facial neuralgia of seven days' standing, in which there was no well-marked periodicity, and which had resisted sulphate of quinine, yield instantaneously and permanently to a quarter of a milligramme of nitrate of aconite. The results are more marked and rapid in cases of recent neuralgia than in those of long standing. Examples are quoted, however, in which the affection had lasted for periods of one month, two months, and even five years, but which had yet been cured, the first on the seventh day, the second on the third, and the last in three weeks. Aconitia has also a distinct effect in secondary neuralgia, as, for example, in dental caries, otitis, paraplegia, etc.

Acute rheumatic arthritis may be successfully treated with aconitia. In four individuals to whom this remedy was administered in doses, at first of half a milligramme per diem, increased gradually to one and a half milligrammes, a cure was effected, once in eight days, and once in ten days. The temperature fell from 39° to 36°, and the pulse in proportion. In the other cases the cure was equally obtained, but only on the fifteenth and eighteenth days respectively, whilst the dose was raised to two and a half milligrammes. The antipyretic action, however, was equally well marked, whilst the temperature fell on the eighth and ninth days about two degrees. The results obtained by M. Gubler are also noteworthy. The results of four cases are published; in these the patients were treated with hypodermic injections of half a milligramme once or twice a day, whilst half a milligramme of aconitia, which was gradually increased till this quantity was taken two to four times a day, was administered internally. In these cases a cure was effected upon the sixth, ninth, twelfth, and thirteenth days: in one case there was a slight stiffness of the joints. The influence of the remedy upon the painful symptoms was very rapid upon the second to the fourth days, whilst upon the fever it was slower, though not less marked. The effects are very remarkable according to M. Gubler in cases of neuralgia of the fifth.

Dr. Oulmont concludes his work with the statement that aconitia is a remedy of importance, since it acts in a certain definite manner upon the human organism, but from its activity it must only be employed in very small doses and at long intervals. Neuralgia is often accompanied by intermittent symptoms and well-marked periods. In such complications quinine must be employed in addition to aconitia. On account of the energetic action of the remedy the susceptibility of the patient should be tested by administering, in the first place, three pills daily, each containing a fifth of a milligramme of crystallized aconitia in addition to five centigrammes of pure quinine; one in the morning, one at midday, and one in the evening. If no alleviation of the pain is experienced on the first day, the dose may be cautiously augmented by a pill per diem, until a maximum dose of six in the course of twenty-four hours is attained, and in the majority of cases it will not be necessary to overstep this limit. If slight diarrhœa occurs, the dose must be reduced. Physiological experiments and clinical observations carried on in the Paris hospitals have shown us that these pills have a sedative influence upon the circulatory apparatus through the vaso-motor nerves, and it is concluded therefore that they are indicated in neuralgia of the fifth, in congestive neuralgia, in painful and inflammatory rheumatic affections, etc. etc.—*Practitioner*, March, 1880, from *Le Progrés Médical*, Dec. 6, 1879.

On a Group of Symptoms probably arising from Neurosis of the Vagus Nerve.

ROSENBACH (*Deutsche Med. Wochenschrift*, Nos. 42 and 43, 1879) says that between the ages of twenty and thirty, there arises, probably especially in man, after undoubted faults of diet, an affection of the stomach in which the essential difficulties in respect to digestion are put in the back-ground on account of certain nervous symptoms. The attacks are characterized by apnœa, palpitation, or (most frequent) a rhythmic action of the heart, pulsation in the region of the abdominal aorta, depression of mind, feeling of hunger, which rises to ravenous hunger, slight discomfort in the epigastrium, and constipation. The longer the affection lasts—especially as the etiological connection with dietetic errors is often not recognized, and the patient's fears are confirmed by a treatment directed towards the heart symptoms—the more the psychical depression grows, while the gastric symptoms come gradually into the foreground. The chalky colour of the face is also characteristic of the first stages of the affection. Rosenbach thinks that these appearances are best explained by reflex irritation of the vagus, brought about by an injurious action on its gastric branches. The prognosis appears, according to the cases observed thus far, to be favourable. When the diagnosis is made in any case, attention must above all be directed to the removal of the causes acting injuriously; thus the regulation of the diet suggests itself as the most important point in the treatment.—*London Med. Record*, Feb. 15, 1880.

On Reflex Paralysis in Ulceration of the Large Intestine.

Dr. A. HOFFMANN (*Virchow's Archiv*, Band lxxx. p. 43) reports a case of dysentery in a man aged 27, who, during a relapse, began to suffer from sharp pains radiating through the left leg. The spine was tender on pressure from the eleventh dorsal vertebra downwards. Cramps had commenced in the left leg, which soon became paralyzed, and its sensibility was lost. Not long afterwards there was paralysis of motion and sensation in the right leg; incontinence of urine followed, involuntary evacuations, bed-sores, and finally death. Reflex excitability was at first retained in the paralyzed limbs; later it was lost, and the patellar tendon-reflex was absent. The faradic excitability remained intact, and also the electro-muscular sensibility. In the large intestine were found ulcerations, which Professor Bottcher considered to be of syphilitic origin. The spinal cord and its membranes were pale; the consistence of the cord was throughout good; there were no granular cells. The large nerve-trunks in the left sacral and lumbar plexus were intact (they were examined microscopically after previous hardening). Between the seventh and tenth dorsal vertebræ the spinal marrow was softened and friable in consequence of diffuse myelitis in the posterior part of the lateral column. Above this focus there were found on both sides other small foci, in which the normal nerve-fibres were quite wanting. Of the posterior columns, the left was considerably changed above this focus, and extremely pale; this change was limited above as far as the pyramidal crossing to the left column of Goll. There were no secondary changes below the focus. Hoffmann considers the primary change to have been a circumscribed inflammation of the left posterior column, from which an acute transverse myelitis had developed itself. Inflammation was indeed absent in the intervening parts (between the myelitic focus and intestinal ulcerations), but it might, according to Hoffmann, have been present, and have subsequently passed off; in any case, the inflammation must have crept into the cord through the posterior roots. Hoffmann does not consider the spinal affection as syphilitic.—*London Med. Record*, Feb. 15, 1880.

Phlyctenular Inflammation of the Vocal Cords.

Dr. RUDOLF MEYER relates (*Berliner Klin. Wochenscrift*, No. 41, Oct. 1879) a case of phlyctenular inflammation of the vocal cords. The patient was a girl 18 years old. She consulted him on June 3d for intense hoarseness, slight irritative cough, and general impairment of health. Eight days before, she had noticed a trifling hoarseness, which rapidly passed into complete aphonia, accompanied by irritation, but by no pain in the larynx. There were some amount of fever, increased thirst, loss of appetite, etc. She had never before been ill, and had only suffered three years previously with slight hoarseness and cold. As her mother was at the time suffering from syphilitic laryngitis, suspicion arose that the affection of the daughter was of a similar nature. Accordingly, laryngoscopic examination was made. Both vocal cords appeared slightly red and swollen; on the left vocal cord a whitish punctated erosion was discovered, and, on the right, the epithelium was similarly affected in a corresponding situation. The pharynx and mouth were normal. The treatment consisted of insufflations of calomel. On June 6th, the condition of the vocal cords was but little changed, but there was some phlyctenular inflammation of the eye, and an eruption of herpes on the right nostril and upper lip. On June 9th, the laryngeal symptoms were much improved; the erosions were scarcely perceptible, the voice had returned, and the herpes on the nose and lip were drying up. On the 10th, the patient was discharged well. Mr. Meyer remarks that he thinks it pardonable that he should have mistaken the case at first sight for one of secondary syphilis of the vocal cords, especially as the mother was suffering from that affection. The circumscribed punctated superficial erosions on the cords were not, however, familiar to him as a syphilitic lesion; but it was not until the appearance of the vesicular eruption upon the cornea, nose, and lip, that he was able to make a correct diagnosis. He goes on to remark that cases of eruption of herpes have been noticed in the mouth and pharynx, and chronic eruptions of psoriasis, eczema, and lupus, corresponding to these affections of the skin, have been described as occurring in the larynx, but he is not aware of any observation of an acute eruption of herpes in that situation.—*London Med. Record*, Feb. 15, 1880.

On Diaphragmatic Pleurisy.

In an interesting work on this subject, M. HERMIL says that this affection is more common than is ordinarily supposed, and that in the cases in which it is primary it may be considered as relatively mild. The first part contains a very complete historical summary; the second, a clinical history. This form of pleurisy commences like ordinary pleurisy, with fever, shivering, pains in the side; all the symptoms, however, being less acute than in ordinary pleurisy. Effusion reveals itself by the ordinary signs, but never rises above the inferior third of the pleura, and rarely reaches that limit. The characteristic indications of the disease are neuralgia of the phrenic nerve, cardio-costal tenderness, and pain at the origin of the scalenus. After two or three days of slightly febrile state, effusion forms on the other side. This is always less considerable than the first, and need hardly be considered a complication; and even this new inflammation, far from inducing a recrudescence of the symptoms, appears to M. Hermil in certain cases to exercise a favourable influence on the evolution of the affection. This paradoxical amelioration is by no means one of the least interesting effects of the symptomatology of benign diaphragmatic pleurisy. [This work of M. Hermil is based upon sixty-two cases, of which a large number are personal; in these sixty-two cases there were thirty-three recoveries and twenty-nine deaths. But whilst there were twenty-eight deaths in the thirty-five cases in which the disease was secondary, there were twenty-three recoveries in the twenty-seven cases in which it was primary.—*Rep.*]—*London Med. Record*, Feb. 15, 1880.

Pleuritic Effusions and Phthisis Pulmonum.

Prof. GERHARDT, of Würzburg (*Wiener Med. Wochenschrift*, No. 40, 1879), offers some interesting remarks on the association of the above-named affections. He premises that the pleura is probably more often the seat of effusion than any of the other serous membranes because it is almost uninterruptedly exposed to negative pressure, except at the height of ordinary expiration and during forcible expiration: for example, in the act of coughing. Owing to this negative pressure a sort of suction is exerted on the membrane, which tends to favour the occurrence of exudation the moment the stimulus of inflammation is superadded. In phthisis, not only is the latter factor very often present, but effusion is frequently favoured by processes of contraction in the lung itself. There are *four* ways in which pleuritic effusion may be associated with phthisis. First, the pleurisy precedes the phthisis. Some time after the former, lung symptoms arise, probably due either to infection from some caseous residue of the pleurisy, or to infection of the lung from the secretion of bronchiectatic cavities formed in its substance to compensate for portions contracted by pleuritic adhesions. Secondly, the pleurisy is excited by commencing phthisis, as evidenced by the previous existence of hæmoptysis, wasting, catarrh, etc. Here the phthisis may sometimes be accelerated by the additional weakness and fever, etc., caused by the pleurisy; and rapid re-absorption of the effusion is sometimes a source of danger, though occasionally the patient from this time seems to take a new lease of life. The third, and most ordinary, form of connection between phthisis and pleurisy is the development of the latter in cases where the lung is already softening or the seat of cavities. Pleurisy of the apices in phthisis is, as is well known, generally "dry." Slight transient effusions also occur; but, according to Gerhardt, the effusion in this form is most apt to be moderate in amount and to have certain definite limits. The upper edge of the dulness reaches near the spine as high as the lower angle of the scapula, and then sinks slightly from within outwards; while in the lateral region it descends with a steeper curve, and meets the diaphragm outside the nipple line. The area of effusion is marked by greater prominence of the side, so that it can often be detected without percussion. The above-mentioned limits of dulness seem to correspond to the zero point of intra-pleural pressure; and in many cases the exudation remains obstinately unaltered at this level. It fills at this period only the space which is left in the pleural cavity by the retraction of the lung; hence the vocal fremitus is weakened over the whole dull area, and is not, as happens later on, increased at its upper margin, where the lung itself has become airless and condensed, and so gives rise to part of the dulness on percussion. Whenever this "stereotyped limit" of effusion, as Gerhardt calls it, is exceeded, the chances of absorption of the effusion becomes smaller, owing to compression of the bloodvessels and lymphatics of the pleura by its positive pressure. In phthisis the effusion tends to remain long stationary, owing to the great amount of retraction in the lung tissue, to the rigidity of the lung substance which renders it less capable of re-aëration, and probably also to the presence of pleuritic adhesions. The existence of an effusion within the above limits seems to affect the patient's temperature little one way or the other. His breathing, however, suffers frightfully if effusion comes to complicate his previous lung disease. He can accommodate himself less easily to the external than to the internal diminution of breathing space.

The fourth and last case in which pleurisy complicates phthisis is where pneumothorax occurs in patients with not very advanced disease, and a considerable reserve of force. The fistula may then quickly close, the small amount of air in the pleural cavity be absorbed, and only a simple empyema remain. Professor Gerhardt has observed several such cases, in which the empyema undoubtedly originated thus. In operating on them the purulent character of the effusion can be safely predicted. In general the pleuritic effusion of consumptives is serous, according to his experience; the minority of such cases are purulent, very few hemorrhagic.

The treatment consists in perfect rest in bed to prevent the necessity for deep inspirations during muscular activity. Narcotics may be given to quiet the cough, and as drugs promoting absorption, digitalis and potassic acetate, and sometimes squills or quinia. Purgatives, or injections of pilocarpin, occasionally seem to start the process of absorption. Iodide of iron, Gerhardt has not found of much use. For mechanical removal of large effusions he considers there are three special indications—danger to life, long persistence in spite of other treatment, and great inconvenience to the patient.

To avoid brusque variations in the suction power of the aspirator, a flexible tube connected with the needle should be attached to one neck of a three-necked bottle, the syringe to the second, and a mercurial manometer to the third neck. The bottle should be of three to five litres capacity, so as to distribute the pressure over as large a surface as possible. Gerhardt has thus succeeded in removing quite small bodies of effusion with a suction force of only thirty millimetres of mercury. The needle should be thrust into the chest at the lowest point of the area of complete dulness and absence of vocal vibration, consistent with its not wounding either the diaphragm or pericardium. If the operation succeeds, (1) the dyspnœa will diminish ; (2) the circumference of the thorax will also become less ; (3) fever will diminish, at any rate for some time, provided the needle used was perfectly clean ; (4) the blood-pressure, fulness of the pulse, and amount of urine passed, will increase, the frequency of the pulse diminish ; (5) absorption of any remaining effusion will be promoted ; (6) in consumptives with moderate laryngeal ulceration, aphonia may disappear, and a tolerably powerful voice be recovered. Unfortunately, in most cases these results are only temporary, and even though there is a complete disappearance of the effusion, the phthisis kills the patient all the same in a few months or years.—*Med. Times and Gaz.*, Feb. 7, 1880.

Night-sweats in Phthisis.

In a communication to the *Berliner Klin. Woch.*, January 5, Dr. KÖHNHORN states that in two cases in which he had tried all other remedies in vain, he met with the most surprising success in treating the profuse night-sweating of phthisis by means of the powder which is employed by the Military Medical Department of the War Minister for the treatment of sweating of the feet. This is composed of salicylic acid three, starch ten, and talc eighty-seven parts. The entire body is to be powdered with this in the evening, the patient protecting the mouth and nose by means of a handkerchief, lest the irritation from the salicylic acid might induce coughing. If the skin is very dry, the powder may be made to adhere to it by first rubbing it with fat bacon or spirits and tannin. [We are informed by Dr. Berkart, of the Victoria-park Hospital, that he has long since found that the most efficacious and prompt means of treating night-sweats consists in, after drying the surface, painting the whole trunk with a very strong aqueous solution of gum acacia. This dries in a few minutes, and next morning the surface is washed with tepid water. A considerable reduction of temperature is produced.]—*Med. Times and Gaz.*, Feb. 7, 1880.

Gonorrhœal Endocarditis.

BAUDIN reports (*Recueil de Mémoires de Méd., de Chir., et de Pharm. Mil.*, Sept.-Oct., 1875) the following case: A dragoon, aged 25, during the tenth week of his first attack of gonorrhœa, was admitted into hospital on July 8. The following day the patient had headache with shivering and constipation, which symptoms were attributed to malaria and treated with quinine. The man, however, continued to grow worse. On July 14, he complained of palpitation: attention being thus directed to the heart, an examination was made, and the area of cardiac dulness found to be increased ; but there was no bulging of the intercostal spaces. On auscultation, a murmur involving the end of the first sound and the whole of the second was heard at the base. Endocarditis was diagnosed; the quinine was left off, and opium administered. A mustard poultice was applied over the heart. Temperature 103.2° Fahr.; pulse 110, intermittent. On the 15th, there was no alteration. On the 16th there was violent shivering. The murmur had become "rasping" in character and louder than on the preceding day. Fremitus could be perceived on placing the hand over the cardiac region. A blister was applied, and infusion of digitalis ordered internally. Temperature 104° Fahr., pulse 110. The man continued in much the same state until the 21st, when the fever abated and the pulse became more regular. On the 23d the pulse was 80; on the 25th it was only 65, and there was no fever; the cardiac dulness had diminished; the murmur was still audible, but was not nearly so loud as before. On the 26th, the patient was convalescent; the pulse was almost regular, and only a slight murmur, limited to the second sound, could be heard over the base of the heart. The urethral discharge had slightly increased from the slight gleet, which was all that was present on the patient's admission into the hospital. In connection with this case M. Baudin remarks that the cardiac trouble, in all the other recorded cases of this affection, is reported to have occurred about the fourth week after the appearance of the urethral discharge. The murmur in this case indicated implication of the aortic orifice mainly, whereby insufficiency and slight narrowing were caused. This lesion, acccording to Marty, is that most generally observed in cases of blennorrhagic endocarditis. The dragoon whose case has just been related had never had rheumatism, nor any chest-disease whatever; nor was there a family history of any of those affections. The author thinks there are only two other cases on record in which the heart became implicated during gonorrhœa without any other affection (especially rheumatism) having intervened, to which the cardiac mischief could be attributed. One case was reported by Lacassagne in 1873; the other by Marty in 1877. In the five cases reported by Desnos in 1877, gonorrhœal rhreumatism had also been present.—*London Med. Record*, Feb. 15, 1880.

On the Use of Hydrate of Chloral in Acute Gastro-enteritis in Children.

Prof. ADOLF KJELLBERG, of Stockholm, contributes to the *Nordiskt Medicinskt Arkiv*, 1879, Bd. xi., Tredje häftet, a short article to show the value of chloral in the treatment of acute gastroenteritis.

What renders the treatment of this disease especially difficult is the great irritability of the stomach, and the violent attacks of vomiting which accompany it, the child rejecting all that it receives, whether medicine or food. To endeavour to arrest these attacks of vomiting is the principal indication for which hydrate of chloral answers better than any other remedy. Rapidly absorbed, as a rule it stops the vomiting, has a calming effect upon the child, and often stops diarrhœa. In consideration of the irritability of the stomach, it is given in the form of an enema, administered, preferably, after a stool. The dose, from twenty-five to thirty centigrammes for children of five to six months, is increased to fifty to sixty centigrammes for those of from twelve to fifteen months. The amount of the injection is only a dessertspoonful. These injections may be repeated, if necessary, two or three times a day. If these doses prove to be too small in any special case, it is proper to increase them. Other remedies are employed at the same time, such as ice-water, cognac and champagne frappé for the vomiting; opium, and an astringent, as internal remedies, or as injections, etc., for the diarrhœa; warm baths, with mustard, for albuminuria, if it shows itself; stimulants to ward off collapse, etc.

In order to increase the effect of chloral, Prof. Kjellberg is accustomed to add to the injection one drop of tincture of opium, and when the need of stimulants is felt, five, ten, or fifteen drops of compound spirits of ether (Hoffmann's anodyne).

Amyloid Degeneration of the Viscera, developed within two Months.

Prof. M. V. Odenius, of Lund, reports a case of traumatic lesion of the knee, in a man 21 years old, heretofore healthy, which appears to have been complicated by a considerable loss of blood, and which had caused perforation of the joint immediately, or at least in a short time afterwards. He was admitted into the hospital at Lund after insufficient treatment at home. He was then much emaciated, and had on the inner side of the right knee a large wound which communicated with the joint, and in the popliteal space there was a large abscess which upon incision let out a large quantity of unhealthy pus. At the end of a short time the patient died, just two months after the accident. The autopsy showed extensive destruction of the articular cartilages, caries of the bone, as well as extensive abscesses above, around the femur, and below, along the tibia. In the kidney, amyloid degeneration of a portion of the *glomeruli*, and of their afferent vessels. Traces of the same degeneration were also discovered in the small arteries of the spleen and in the tissue immediately adjacent to these arteries. The other organs did not present any alterations which could be said with reason to have any relation whatever to the amyloid degeneration, so that we have every reason to admit that the latter depends directly on the lesion of the osseous system, as in the celebrated cases of Cohnheim (Virchow's *Archiv*, Bd. LIV. s. 271). Thus we arrive at the conclusion that in cases of this kind, amyloid degeneration may be developed in the short space of two months.—*Nordiskt Medicinskt Arkiv*, 1879. Bd. XI. Tredje häftet.

Experimental Study on the Treatment of Hepatic Colic.

M. Laborde sums up (*Gaz. des Hôp.*, Sept. 16, 1879) the results which have been obtained from physiological experiments in regard to hepatic colic. (1) The excretory bile canals are endowed with a power of contraction; they are consequently able to contract spasmodically on the application of a stimulus, whether this be applied directly or indirectly. The contractility resembles that of unstriped muscular fibre, and the existence of such fibres in the walls of the canals is clearly shown by histology, and is in perfect harmony with the results obtained from experiment. (2) The mucous membrane of these channels is exceedingly sensitive, and this occasionally manifests itself under the influence of more or less intense stimuli, by painful symptoms, and by reflex phenomena, shown directly by spasms of the channels themselves. (3) The phenomena are particularly induced by the presence and contact of foreign bodies, such as biliary calculi whose spontaneous migration is thus rendered more difficult. These changes of place when they occur, are only accomplished after a longer or shorter period, and they possess the peculiarity that the foreign bodies are always carried towards and finally into the gall-bladder. (4) Anæsthetic and antispasmodic medicines are best adapted for the treatment of this morbid state, of which the mechanical conditions can readily be realized by experiment. (5) These remedies, more especially morphia, chloroform, and hydrate of chloral, act by exercising at one and the same time an anæsthetic and paralyzing influence, which produces a relaxation of the spasmodic contraction, a distribution of the spasmodic canals, and an accumulation of the bile which acts upon the foreign body by means of a *vis a tergo*, and forces it onwards towards the intestines. (6) The combination of morphia with hydrate of chloral or with chloroform, *i. e.*, the simultaneous administration of these remedies, is the most effectual way of obtaining the required results, which are the insensibility of the biliary canals, the prevention of pain, and the favourable influence upon the migration and rapid extrusion of the extraneous substances.—*Practitioner*, Feb. 1880.

Cysticercus Cellulosæ affecting the Skin.

EDWARD SCHIFF of Vienna gives (*Vierteljahresschrift für Dermatologie und Syphilis*, 1879, 2 und 3 heft) an interesting account of a case of this extremely rare cutaneous disease. On various parts of the body of a strong man of 26 were numerous tumours, varying in size from a pea to a hazel-nut. These tumours were situated *under* the skin, in the subcutaneous areolar tissue, and between the muscles. They were themselves movable on their base, and the skin covering them was so over them. Their consistence was rather difficult to define, for they felt gristly, combined with elasticity. Their surface was invariably smooth, and conveyed the impression that there was a tolerably hard cyst wall rendered tense from over distension. Excision enabled Chiari and Csoker to determine that the tumours were the scolices or larval forms of tænia solium. The first tumour appeared a year previously on the anterior margin of the right pectoralis major muscle, and then by degrees others showed themselves on different parts of the body. The man said that for about a year he had had repeatedly occasion to eat raw beef. Schiff thinks that some other accidental mode of introduction must have been active, since the larvæ of Tænia solium are never met with in oxen (?), but only those of Tænia mediocannellata, while the larvæ of the latter have not yet been observed in man. To strengthen this view, a strong anthelmintic brought away no segments of tapeworm. This patient also exhibited some curious nervous phenomena which are worth noting. Since the age of ten, when he had a severe attack of typhus fever, he suffered from a very intense tremor of the whole body, but especially of the upper limbs, presenting in course of years remissions and exacerbations. Besides this, synchronously with the appearance of the tumours under the skin, epileptiform convulsions came on with tonic and clonic spasms, affecting most severely the muscles of the neck, and preceded by an *aura epileptica*. Further, during the last year the patient often complained of uneasiness and pain over his whole body. The muscular tremor Schiff regards as a sequela of the typhus. The uneasiness, pain, and recurrent epileptic seizures, as identical with the symptoms of cysticercus of the brain, as described by Griesinger, ceasing for the time when each individual scolex became encysted, and thus lost its power of locomotion through the cerebral tissues, Schiff thinking with Lewin that thus the cysticercus migrates, and not merely, as Griesinger believes, advances along the course of the bloodvessels.—*Edinburgh Med. Journal*, Feb. 1880.

Observations on Alopecia Areata.

Prof. H. EICHHORST, of Göttingen (Virchow's *Archiv*, Bd. lxxvii. heft 2, 1879), has in a case of alopecia areata, by a new means of investigation, discovered spores of a fungus in large quantity, which raises anew the question of its parasitic origin. The patient was a sawyer, aged 53, who suffered from aortic constriction and insufficiency, the result of rheumatism. A year before he came under observation bald patches appeared in the hair of the beard, and six months later on his head. The hairs set round the edges of the bald patches on the beard were as firmly fixed in their follicles as elsewhere, though when the disease began they came out easily. On the head, where the complaint was more recent, the peripheral hairs could be pulled out painlessly and without difficulty, while on more distant parts they were normally firm. Of the marginal hairs most of them came away without their root-sheath; in 10 per cent. the upper half of the root-sheath remained adherent, and these alone exhibited the changes to be described. These hairs were immersed for an hour in a 20 per cent. solution of caustic potash, an equal period in absolute alcohol, then for a similar time in a saturated solution of bismarck-brown, washed with absolute alcohol, and examined in dilute glycerine. These hairs, in the first place, removed from the neighbourhood of a patch, showed a part which corresponded to that occupying the upper two-thirds of the follicle, either but faintly or not at all stained, while a healthy hair was stained uniformly. This untinged part was markedly thinner, both than the rest of the hair, but also than the same part of an average normal hair. The explanation of these two facts was only made out by the employment of very high powers (820–1250 d.). On such hairs as were accompanied by the root-sheath numbers of spores were found between the hair and root-sheath. These were round, from 3.5 to 4 mm. in diameter, some smaller and many had a double contour. They were arranged in heaps and groups, some few had made their way outwards between the cells of the root-sheath, none penetrated into the hair, not a trace of mycelium could be discovered. The spores were only found on that part of the hair to which the root-sheath remained attached, direct observation gave no clue to their presence or not in the lower third of the hair follicle. The sole changes which the fungi had occasioned in the hairs consisted in a marked constriction (pressure-atrophy), and in a loss of capacity for their imbibing colouring material at these points, and this action of the spores was exhibited also on the hairs which came from the neighbourhood of the diseased area, though without their sheaths. The fungus itself bears, in Eichhorst's opinion, a closer connection with that of tinea versicolor than with that of tinea tonsurans or favosa. He thinks that the insinuation of the fungous elements between the hair and its root-sheath loosened it and favoured its falling off. Whether all cases of alopecia areata are parasitic or not, must be settled by further observations on these lines, but it can no longer be denied that there is a parasitic form of the disease. Practically, therefore, in addition to local stimulation and constitutional tonics, we must avail ourselves of antiparasiticide remedies, all the more as such are good cutaneous irritants.—*Edinburgh Med. Journal*, Feb. 1880.

Treatment of Herpes Zoster.

In the treatment of this affection all remedies must be local. The chief attention must be paid to the epidermis, and care must be taken not to apply poultices or order baths during the acute stage of the attack, since applications of this kind would infallibly cause rupture of the vesicles. For a similar reason the patient should be cautioned against scratching himself. The treatment, therefore, which has lately been recommended of scrubbing the part with a couch-grass brush for the purpose of destroying the vesicles cannot be too strongly discountenanced. The local application recommended by Mr. Hardy consists of starch powder, 40 grammes, mixed with 10 grammes of zinc oxide. The affected spots should be freely powdered with this mixture, which may be fixed by means of a layer of oil or cucumber ointment, whilst the whole is covered with a thick layer of cotton-wool. The local application relieves the pain, which, like neuralgia, should be treated with sulphate of quinine. When the pain is so great as to prevent sleep, a pill, consisting of 0.025 gramme of opium in conjunction with one or two grammes of chloral may be given. Hypodermic injections of the hydrochlorate of morphia may also be made, and they should be repeated as long as may be necessary. This is found to be the best method of subduing the pain and giving sleep. In cases of pale or red ulcerations, recourse should be had, at this period of the disease, to poultices of rice-powder and strained potatoes. In gangrene, tonic treatment must be employed, and the part should be washed with carbolized water, with a solution of sodium chloride, or with camphorated alcohol, whilst wine and brandy are given internally. At the Hospital of St. Louis, M. VIDAL treats, or rather stops herpes by applications of collodion, which cause the vesicles to abort during the first two or three days. On the fourth or fifth days from the first appearance of the vesicles the collodion should not be used, as the vesicles shrivel and ulcerate beneath the collodion. After the expiration of the first two days, the real treatment should be adopted, and M. Vidal then employs a paste of starch and balsam.—*Practitioner*, Feb. 1880, from *Gaz. des Hôp.*, Sept. 16, 1879.

SURGERY.

Operative Treatment of Nasal Polypi.

HARTMANN (*Deutsche Med. Wochensch.*, 1879, pp. 28–31, and *Med.-Chir. Rundschau*) attributes the development of these growths to purely mechanical causes, which act in the following manner. Separate swellings on the basis of a chronic hypertrophic catarrh of the whole mucous membrane which project beyond the surface, are pulled upon by the stream of air and secretion passing through the nostrils, especially on blowing the nose, and when they have reached a certain size they are drawn downwards by their own weight. On this account, the great majority of nasal polypi arise from the surface or margin of the turbinated bones, as a rule the middle one. Those with a long pedicle, which extend into the naso-pharynx and lower pharynx, arise from the posterior extremity of the middle turbinated bone. Most rarely polypi arise from the septum. For their removal the author employs Blake's snare, either with his own or with Zaufal's modification, using steel wire for the loop. After the loop is placed round the polypus the growth is either cut off or pulled out. If the polypi recur obstinately, the galvano-cautery should be used.—*Lond. Med. Record*, Feb. 15, 1880.

Extirpation of the Larynx and Anterior Wall of the Œsophagus.

At a recent meeting of the New York Pathological Society (*Med. Record*, Feb. 28, 1880), Dr. F. LANGE presented a tumour of the larynx, with the following history: Mr. A., of St. Louis, Mo., 74 years of age; previously of healthy condition; two years' ago was first seized with periodical hoarseness, and soon after by spells of coughing, caused by small particles of food getting into the larynx during deglutition. In October, 1878, a tumour began to show itself on the upper edge of the right wing of the thyroid cartilage. On account of increasing dyspnœa, tracheotomy was performed at Chicago, in February, 1879. Since last July fluid food only could be swallowed; the patient lost much in general health and strength. His tracheal canula was not large enough to secure a sufficient amount of air, and he was much troubled by fits of dyspnœa, and even suffocation, from the passage of food into the trachea on every attempt to swallow. October, 1879, tumour had attained almost the size of an orange, was located on the upper part of the larynx touching the hyoid bone, dislocating the right carotid artery and pushing upward the base of the epiglottis, and everting it so that closure of the opening of the larynx was impossible. Deglutition grew worse rapidly, and on October 12, 1879, the operation was performed, consisting in removal of the tumour, including, with the exception of the lower part of the cricoid cartilage, the larynx, the wing of the hyoid bone, and an anterior wall of the œsophagus, which latter had, unfortunately, become involved in the disease. After three months of a very difficult and troublesome after-treatment, during which his life was in question more than once, the patient left for his home. By means of an artificial apparatus closure of the œsophagus was effected, deglutition was secured, and the patient was able to take his food without difficulty, and by means of an artificial larynx was able to articulate. Still, the apparatus was troublesome to him, and he did not care much about it. According to the last account, he was getting along tolerably well, more than four months having passed since the operation.

The tumour was essentially an extra-laryngeal one, taking its origin from the upper edge of the right wing of the thyroid cartilage, pushing downward the same, on account of the resistance of the hyoid bone, so that the supposed tracheotomy, performed formerly, had been thyrotomy, the tube passing just between the vocal cords. This explained the narrowness of the space and the difficulty in introducing the tube. The tumour had involved the mucous membrane, and especially the right false cord, and almost entirely blockaded the larynx. On the upper surface a horseshoe-like ridge could be seen, where the hyoid bone was in connection with the growth. On the right side the mass of the tumour had grown between the larynx and the œsophagus, pressing upon the latter and causing the trouble in deglutition. The epiglottis, of course, had also been removed entirely.

Dr. G. M. Lefferts said that having seen Dr. Lange's interesting case of extirpation of the larynx (the first operation of the kind performed in America, and the nineteenth upon record) in consultation, and, having had the pleasure of assisting him at his operation and of afterwards watching the gradual process of cicatrization and final fitting of the artificial vocal apparatus, I am in a position to judge of the accuracy of his report, and to testify to the thorough surgical knowledge and manual skill which have done so much to conduct the case to its successful termination.

The chief point of interest, in cases of this class, lies in the indications for the operation; the latter is not, contrary to what has been sometimes asserted, a difficult one to perform, and the question if whether the larynx shall be dissected out from above downward or from below upward, as insisted upon by the various operators, can well be left for decision to the peculiarities which individual cases may possess. He has performed it both ways upon the cadaver, and finds that it makes but little difference as far as the mere care of the operation is concerned. In Dr. Lange's case there was no room for question, as far as the indications went; a patient in hale condition, notwithstanding his sufferings, with a hard, dense tumour the size of a small orange blocking up completely the interior of the larynx, interfering with all its physiological functions, having long since necessitated the performance of tracheotomy, and now rendering deglutition, even of fluids, nearly impossible—this fact alone, according to Schüller, an overwhelming or vital indication certainly, nothing but death from starvation lay before the patient. It may be asked why was not a thyrotomy or a resection of the larynx performed instead of an extirpation? A glance at the specimen will clearly answer the question. When Czerny, in 1870, first devised this operation, and Billroth, in 1873, first performed it upon the living subject, it was supposed by some that in it lay a ready method of removing a larynx rendered useless for all physiological purposes by cicatricial contracture and stenosis, following syphilis, perichondritis, from typhoid and the like, and replacing it by an artificial organ, thus overcoming the difficulties presented by this intractable class of cases; but the formidable array of deaths which have thus far followed its performance, for other causes have totally precluded any such idea, and it seems that we are to-day all agreed that it is alone applicable in cases of malignant or recurrent growth affecting the larynx; but even here a limitation must be made. All instances of laryngeal cancer are not proper cases for extirpation of the larynx. Have not the unfortunate results (thirteen deaths in nineteen cases) which have followed the operation sooner or later in the majority of cases so far reported been perhaps due, in great part, to an improper or hasty selection, to a non-appreciation of the true and safe indications?

The interesting question may, perhaps, be still further narrowed down. Is it ever a justifiable step to take, in even the commonest form of the disease—pharyngo-laryngeal epithelioma? It is impossible, by extirpation of the larynx alone, to eradicate the wide-spreading destruction, involving pharynx and neighbouring parts as well as larynx; and Langenbeck's heroic procedure will hardly commend itself to any but the most venturesome surgeons. Can even primary laryngeal cancer, after its earlier and local stages, or when it occurs in the form of a diffuse cellular infiltration, be removed without question of recurrence? The statistics show us not. We are thus left with a single class of growth, and in this class have all the successes been made. Bottini, Foulis, Czerny, and now Lange, have extirpated for *sarcoma*, and the patients have lived. If, therefore, in the future, cases be more carefully selected, the above forms excluded, and, above all, the operation earlier performed, before the extension of the disease renders its complete removal an impossibility, he cannot question but that the results will be better. In the present stage of our knowledge, its utter condemnation in some quarters seems unreasonable. Have the other operative steps heretofore undertaken for this terrible disease shown us any better figures? Thyrotomy for the removal of malignant neoplasms of the larynx has been performed, according to Burns, some nineteen times, and in all cases, with the exception of one, was there recurrence in little over a year. Tracheotomy, it is well known, is but a palliative measure—prolonging life, it is true—but not meeting the ulterior surgical indication, and endolaryngeal destruction of the growth has been but rarely attended with success, and then only when the small primary cancerous nodule has been dealt with. We are thus forced to an extirpation of the organ as the sole means which to-day presents a fair chance of saving life. If, however, better success is to be obtained, it must be in cases of *circumscribed* epithelial cancer; and through an early resort to the operation under such circumstances, will the extirpation become a much more certain procedure than the thyrotomy.

On Extirpation of the Pharynx.

In the current number of the *Archiv für Klinische Chirurgie*, Professor von LANGENBECK submits to the notice of the profession an operation for the extirpation of the pharynx, and relates the histories of three cases in which he had resorted to it for the removal of cancerous growths in that cavity.

Although these three cases were unsuccessful in his hands, he thinks the operation worthy the attention of surgeons, as the fatal terminations were due to the ill effects which the removal of the pharynx exercised upon the larynx rather than to the operative procedure itself. The operation, when conducted according to the rules laid down, is entirely devoid of danger, and can be performed without much difficulty. It is not intended to take the place of the various operations which have hitherto been resorted to for the removal of tumours in the upper part of the pharynx and naso-pharynx, but is proposed for the extirpation of those growths, which, from their situation in the lower part of the pharynx, have been hitherto considered beyond the reach of surgery.

As regards the diagnosis of these growths, Dr. von Langenbeck points out that when they affect either of the lateral walls of the pharynx, they produce a distinct swelling in the upper part of the side of the neck, pressing the larynx to the opposite side, so that the pomum Adami is no longer in the middle line. If the tumour be situated in the front or hinder wall, the larynx will be pushed forward, and, in extreme cases, the pomum Adami will project on a level with the chin. If the pharynx only be affected, the voice is muffled, the patient speaks as if he had a lump in the throat, deglutition is more or less impeded, but respiration is not affected. If the carcinoma extend into the larynx (which is very rarely the case), involving the ary-epiglottidean folds or the vocal cords, hoarseness, aphonia, and stridulous respiration may be expected; but the extreme dyspnœa present in primary carcinoma of the larynx does not occur; at least, it was not a symptom in any of the cases which Dr. von Langenbeck had observed. When the carcinoma affects the lateral walls, it is apt to involve the great vessels at an early period. This happened in one of Dr. von Langenbeck's cases, in which, to avoid wounding the vessels, a thin layer of the tumour had to be left adherent to them.

The entire extirpation of the pharynx without the simultaneous removal of the larynx is quite possible, on account of its loose attachment to the neighbouring parts. The front wall, although it closely follows the contour of the posterior part of the larynx, is so loosely connected with it that its separation from it, as far as the entrance into the larynx, can be readily accomplished without wounding the perichondrium. Still less firmly is the posterior wall attached to the front of the vertebral column; and when it has been cut transversely on a level with the lower edge of the soft palate, it can be easily separated from the prevertebral muscles by means of a blunt instrument. Laterally, also the pharynx, except at the points of attachment of its muscles, is only connected with the large vessels and other structures external to it by loose connective tissue.

The operation is performed in the following manner: After the trachea has been opened and plugged with Trendelenburg's tampon-canula, the patient's head is drawn well back, and the face turned to the side opposite to that on which the operation is to be performed. An incision is commenced below the lower jaw, midway between the symphysis and the angle, and is carried over the greater cornu of the hyoid bone in the direction of the sterno-hyoid muscle, terminating just above the tracheal wound. The skin, superficial fascia, platysma, and omo-hyoid are divided, the posterior belly of the digastricus and the stylo-hyoid are detached from the hyoid bone, the lingual and superior thyroid arteries and the facial artery and vein are divided and tied, and the superior laryngeal nerve and its external laryngeal branch are divided. The pharynx is now opened; the larynx is firmly drawn to the opposite side, and at the same time made to revolve on its long axis, so that its hinder surface is well exposed. The front and side walls of the pharynx are detached from their connections, and the posterior wall is cut through transversely at a level with the lower edge of the soft palate, and separated from the vertebral column. The pharynx is then finally removed by severing its connection with the œsophagus.

The question now arises, if the operation in itself is so free from risk, and easy of accomplishment, what is the cause of the fatality which has hitherto attended it? Putting aside the second case, in which the patient, greatly exhausted by his inability to swallow food, and by the unavoidable capillary hemorrhage during the operation, succumbed a few hours afterwards, the great danger would seem to be inflammation of the lungs set up by the entrance of saliva, secretion from the wound, or vomited matter, into the air-passages.

Whether the entrance of foreign bodies may be attributed to the paralysis of the mucous membrane consequent upon the unavoidable division of the superior laryngeal nerve is a moot question, as portions of the larynx in two of the cases (the arytenoid and a portion of the cricoid cartilage in one, the arytenoid and a portion of the right vocal cord in another) were removed at the same time. Dr. von Langenbeck has moreover seen this nerve divided in other operations, but has not found its division followed by the same untoward results.

Looking to the cause of the failure of the operation, it seems questionable whether it would not have been better to remove the whole larynx. In the case in which the tampon-canula was kept in after the operation, the patient unfortunately died in a few hours. It therefore remains uncertain what influence the retention of this canula might have had in guarding the air-passages from the entrance of foreign matter, and whether the larynx might not subsequently have so far recovered its functions as to prevent foreign matter from passing into it.

The first case in which the operation was performed was that of a man 48 years old. The growth involved the right half of the pharynx and larynx, extending as high as the hyoid bone, and as low as the false vocal cords, while posteriorly it reached to the vertebral column. After the removal of the growth, together with the pharynx, the right arytenoid and part of the right half of the thyroid cartilage, the upper portion of the wound was closed with five sutures, and a drainage-tube introduced into the lower. The tampon-canula was taken out, and replaced by an ordinary one. The patient was fed by a tube introduced through the mouth. He survived the operation three days, and appeared to have died of pneumonia and gangrene of the lung, from the escape of the saliva and secretion of the wound into the air-passages. A *post-mortem* examination was not allowed.

The second patient was a man 58 years old. Here the whole pharynx with the upper part of the œsophagus was removed, and a small portion of the inferior cornu of the left thyroid cartilage. The cut end of the œsophagus was sewn to the wound in the skin, and a soft India-rubber tube introduced into it. The upper portion of the wound was secured by sutures, the lower left open. The tampon-canula was left in the trachea. The patient died the same night of exhaustion.

In the third case, the patient was a woman, 52 years old. The growth was of the size of a walnut, and had invaded the whole right half of the front wall of the pharynx, the right arytenoid cartilage, and a portion of the cricoid. These parts were cut away with the growth. The wound was left open. The patient was fed by a tube at times through the mouth, at times through the wound. On several occasions, the administration of food was followed by vomiting. Portions of the food thus rejected, escaping into the air passages, produced pneumonia and bronchitis, of which the patient died on the eighth day after the operation. At the *post-mortem* examination, the right cornu of the hyoid bone was found bared of periosteum, as was also the hinder portion of the right ala of the thyroid cartilage.—*London Med. Record*, Feb. 15, 1880.

On Resection of the Ribs in Chronic Empyema.

Dr. J. A. ESTLANDER contributes to the *Nordiskt Medicinskt Arkiv*, 1879, Bd. XI. Tredje häftet, an instructive paper on this subject, of which the following is an abstract:—

Although the antiseptic method may have rendered great service in the treatment of empyema, there exist many cases in which suppuration is indefinitely prolonged in spite of antiseptic lotions, and finally produces the death of the patient, usually by amyloid degeneration of the kidneys. These unfortunate cases are due to the fact that there exist no adhesions between the lung and the thoracic wall, so that the former retract completely, and thereby cause in the pleural cavity a space which it is impossible to fill, as the ribs have not the power to retract sufficiently. The author does not deny, however, that constitutional causes cannot thus act, and cause the death of the patient independently of the existence or non-existence of adhesions. In fact, in ordinary cases, it is principally the contraction of the thickened pleura, shrivelled by the tension of the thoracic muscles, which causes little by little the diminution of the suppurating cavity, and finally its disappearance. The ribs have to follow this movement, and consecutive scoliosis shows that they do so; but if the cavity is very large, neither the contraction of the pleura, nor that of the bony wall, suffices to bring together the pleural surfaces, and the lung is found at the bottom of the cavity, pushed back towards the spinal column. It is for such cases that the author proposes resection of several ribs, from three to six, or perhaps even a greater number still. But the disease must be of long standing, and the pleura very much thickened, in order that the latter may retract forcibly, the resistance of the ribs having been diminished by the operation. This circumstance is, moreover, at the same time favourable, necessary even, to the complete performance of resection.

The point to choose is that portion of the thorax which is situated beneath the axilla, as that region is destitute of large muscles; if there exists a fistula, it may serve as a *point de repire;* without that we must make a counter opening. Ordinarily the author has made transverse incisions, corresponding to the costal interstices; by a single incision he has laid bare two ribs, sometimes three, and has thus effected the desired operation. It is needless to say that the resection was subperiosteal, and that the whole of the operation and dressing was executed with the modern antiseptic precautions.

The fragments removed were from three to six centimetres in length. The general condition, more or less bad, of the patients, does not present any contra-indications against resection—quite the contrary, provided the exhaustion of the subject has not reached a point rendering success impossible.

The author gives a detailed account of six cases in which he has employed his method. The age of the patients, five men and one woman, varied from twenty-one to fifty-six years; the duration of the disease from three months to a year and ten months. In all these cases suppuration was very abundant; the usual antiseptic expedients, and even the resection of a single rib, were attempted in vain, and the general condition of the patients was bad—in the case of one of them almost beyond hope. After an evident improvement, this latter patient died. All the other patients were cured, although three had left the hospital before the final closing of the fistulæ or of the counter openings.

A Case of Abscess of the Kidney, in which Nephrotomy, with Subsequent Free Drainage, was attended with Satisfactory Results.

Mr. Chauncy Puzey, Surgeon Northern Hospital, Liverpool, records an extremely interesting case, in which stricture of the urethra of twelve years' standing with resulting chronic retention and cystitis was followed by suppuration in the kidneys, in a coloured seaman, forty years of age.

The patient first came under observation on Aug. 12th, 1878; at which time he was unable to pass any urine by the penis, but every fifteen or twenty minutes he was out of bed straining an ounce or two of thick ammoniacal urine (mixed with pus, mucus, and blood) through a very small opening in the perineum. Mr. Puzey did a perineal section, and, having passed a full-sized elastic catheter through the penis into the bladder, was enabled to keep up constant siphon drainage, by means of a long India-rubber tube carried from the catheter to a vessel containing some carbolized fluid and placed under the bed. By this means, combined with frequent irrigation of the bladder with warm weakly carbolized water, and the usual general treatment of cystitis, rapid improvement took place, and the patient's health steadily progressed towards recovery; but after a time it was observed that, although the man seemed in fairly good health, he frequently suffered from pain in the right loin and groin, and that although the urine was now quite sweet, clear, and of normal acidity, it frequently contained a quantity of thick creamy pus, which, from its appearance, could not be due to cystitis. It should be noted that at this time he could pass a full stream of urine without the slightest difficulty, although the perineal fistula still remained.

In the latter part of January, 1879, his condition was thus noted: "He has a weary, anxious look; complains of pain in the right lumbar region, the pain occasionally shooting down to the right testicle, and along the inner side of the thigh. There is deep-seated tenderness in the neighbourhood of the right kidney; he has occasional slight rigors, followed by rise of temperature in the evening, and there is frequently a deposit of pus in his otherwise healthy urine." These symptoms gradually became aggravated, and a deep-seated but distinct swelling could be made out in the region of the right kidney anteriorly. In the loin there was some apparent fulness, but it was questionable whether this was not due to muscular rigidity, the patient constantly bending his body to the right, evidently to take off pressure from the diseased kidney. Gradually it became evident that there was a distinct relation between the size of the swelling, the distress of the patient, and the amount of pus in the urine. So marked was this that, after a while, a glance at the temperature chart, or even at the man's face, would tell us whether there had been a free discharge of pus; or, if we first looked at the glass vessel containing the last twenty-four hours' urine, we could anticipate the state of the patient. Thus, one day, the temperature would be found high, the tumour distinct, and the urine almost normal, the patient at the same time suffering much distress; next day he would be much better, with a normal temperature, and several ounces of pus would be found lying at the bottom of the glass measure full of urine.

There could, then, be little doubt that the right kidney was distended with pus; careful observations made by myself and colleagues showed pretty clearly that the left kidney was healthy, and it became evident that the only way to prevent death from pain and exhaustion was the free evacuation of the swelling. The man was willing to submit to any operation, and it was decided that the kidney should be cut down upon through the right loin; that if perinephritic suppuration was found, and the kidney could be enucleated, that *that* should be done; but that if (which seemed most probable) the pus was contained altogether in the kidney, and that organ was firmly fixed by adhesions, then a free opening into the kidney, followed by drainage, would be the only alternative.

Therefore, on April 2d the patient was chloroformed, and, with full antiseptic precautions, the kidney was cut down upon in the manner suggested by Mr. Bryant—that is, the incision was much the same as for lumbar colotomy, but reaching rather nearer the spine. On cutting through the transversalis fascia, it was found intimately adherent to the capsule of the kidney. The kidney itself was paler in tint than normal. A trocar and canula was pushed into it, and thick pus welled out. A narrow bistoury was passed into the opening made by the trocar, and the kidney was laid freely open upwards and downwards to the extent of two or three inches; a large quantity (probably more than a pint) of thick, odourless pus escaped, and then the cavity was well irrigated with a stream of carbolic water, large masses of phosphatic and other deposit being thus washed out. The bleeding from the cut surface of the kidney (here about half to three-quarters of an inch thick) was very free; the edges were therefore seared with the thermo-cautery. On examining the interior of the kidney digitally, which could be fairly done when the abdominal walls were well pushed backwards towards the spine, the dilated calyces and the entrance to the ureter could be clearly distinguished. The anterior surface of the kidney was much thinned, and the finger moved about in it could be felt by the hand pressing upon the abdomen. The dilatation had evidently principally occurred at the expense of the anterior portion of the kidney, and it was evident that there was so much matting together of neighbouring structures that the organ could not be enucleated. One or two stitches were passed through the thickened capsule on each side of the incision and attached to the skin, so as to draw these two structures as much as might be together, and thus to assist in preventing extravasation of pus and urine among the muscular layers which had been, of course, freely divided. A large drainage-tube (half an inch in diameter), doubled up, was passed into the kidney, the ends projecting externally, and the wound, which still oozed, was filled with oiled gauze, the dressing being completed antiseptically.

The patient appeared somewhat collapsed for an hour or two after the operation, but warmth and stimulant enemata soon brought him round. He was made to lie on the wounded side. At 8.30 P. M. the dressings were found moist and were changed. The man passed a good night. At 8 P. M. the temperature was 104°; pulse 116; at 10 P. M. the temperature was 103°; at 8 A. M. next morning 101°. Five or six ounces of clear amber-coloured urine were passed during the night. The dressings were changed twice during the next day, there being much thin sanious discharge from the wound. That night the temperature was 104°; fifty ounces of urine were passed during the first thirty hours after the operation. On the 4th April the morning temperature was 100.2°; in the evening 99.4°; pulse 86. Forty-four ounces of urine passed in the twenty-four hours.

After this, the progress was uninterrupted. The large double drainage-tube was removed on the fourth day after the operation, and a single piece of the same calibre and about eight inches long was passed into the kidney (and ureter?). There was no redness or swelling about the wound, and the antiseptic dressing answered admirably under the careful management of Mr. Hughes-Jones, the house-surgeon, the wound remaining throughout perfectly clean and sweet, and there being very little pus in the dressings, but generally a deposit in the urine. The temperature remained normal, there being only one rise (on the 21st and 22d April), when the thermometer marked 103.4° and 102.4°; there was then some pain in the right kidney, and a little blood appeared in the urine. It seemed probable that these symptoms were due to the kidney contracting on the end of the drainage-tube, which was therefore partly withdrawn and shortened, after which the pain and flow of blood ceased, and the temperature at once fell to normal. The average daily quantity of urine passed for the first fortnight was forty ounces, and during the next month between forty and fifty; of course some escaped through the wound into the dressings.

Eight weeks after the operation, the man being, so far as concerned his general health, well, the urine having been for two or three weeks almost free from pus, and the wound being completely closed with the exception of a small sinus which was kept open by the drainage-tube, Mr. Puzey removed the tube, hoping that the patient might be considered cured. At this time he said that he felt better than for twelve years previously. To Mr. Puzey's great disappointment, however, in a day or two his temperature ran up to 103.4°, and he had a return of the old feeling of pain, and fulness in the right hypochondrium. There was also a little pus in the urine. With regret, therefore, he reintroduced the drainage-tube, and very soon the temperature fell again to normal, and the patient was easy again. The sinus was dilated with a laminaria tent, so as to admit a larger drain, and at the end of a month the patient went to Woolton. There he remained for six weeks, and then, having no home, he was readmitted into hospital. He was then in good health; told Mr. Puzey that he had gained nearly two stone in weight (by the scales) in a little over two months, but he was most anxious to have the opening in the loin closed. The drainage-tube was therefore removed; but a speedy return of the old symptoms once more necessitated its reintroduction. The question now arose, why could not the small quantity of urine secreted by the kidney pass through the ureter into the bladder? And it struck Mr. Puzey that the ureter might be strictured or distorted, and that it might be catheterized, at all events through its upper portion. After a long and cautious trial, he was able to introduce a No. 2 gum catheter, with a slightly curved stilette, into what was evidently the upper part of the ureter, and then, withdrawing the stilette, to push it along until only about two inches remained outside the wound. It was tied in, and the next day a size larger was passed. It caused no inconvenience, and the man dressed himself and walked about as usual. Later on, as it had been urged upon Mr. Puzey very strongly that there must be a calculus in the ureter, he determined to try and reach the bladder through the ureter, and clear up that point. He obtained some long French bougies, eighteen or twenty inches in length, and on at least two occasions passed one of them in nearly up to the waxed end. The patient declared that he felt the end in the bladder, and Mr. Puzey felt it impinge against something hard, probably the bony floor of the pelvis. However, he failed to prove by injections of coloured fluids that the bladder had been entered, and he has now no doubt that the point of the bougie stuck at the vesical orifice of the ureter.

No progress having been made in the direction of opening up the flow of urine towards the bladder, and it appearing likely that the quantity of urine excreted by the kidney was after all very small, it was decided that the best plan would be to reopen the wound and kidney, and keep it widely patent as long as possible, in the hope that the organ would contract and ultimately altogether cease its functions.

Accordingly, on the 4th September, the patient having been chloroformed, the wound was re-opened to about two-thirds of its extent; the kidney bled profusely and the thermo-cautery was used freely. The state of affairs was now very different from that observed in April. The portion of kidney which could be explored was now much contracted, the finger passing into one cavity (dilated calyx) upwards, and into another funnel-shaped one downwards towards the ureter.

Excepting some pain and tenderness in the neighbourhood of the kidney, no inconvenience was felt from this operation. The wound was kept as freely open as possible; and in ten days or a fortnight the patient was walking about again; and things seemed to promise well. He passed from two to three pints of healthy urine in the twenty-four hours; had no pain; and the drainage from the wound was fast diminishing. But the man looked feebler; for several weeks he had been losing the bright and glossy look (characteristic of the healthy coloured man) which had returned to him in the summer; and he was losing flesh. He was allowed to go out every fine afternoon by the riverside; and on the 4th of October, his temperature having been for the previous fortnight normal, he had a slight rigor, and the temperature rose to 101.2°; he also had a headache and felt sick. Next morning his temperature was 105°, and he was complaining of pain in the right chest and of cough. Examination of the chest showed signs of right broncho-pneumonia; and from this he gradually sank and died on the 11th October.

A post-mortem examination showed the upper lobe of the right lung in a state of gray hepatization, the section of which gave exit to abundant exudation of semi-purulent fluid. The bronchi were thickened, inflamed, and filled with muco-pus; the other two lobes were congested; there were some old adhesions at the base, and slight recent adhesions over the upper lobe; the lower lobe of the left lung was œdematous, otherwise healthy. The liver was adherent to the tissues round the right kidney, and its capsule was thickened; it weighed six pounds and a half (the normal weight being three to four pounds), was very soft, lardaceous, and showed signs of amyloid degeneration. The left kidney was greatly enlarged, weighing, when first removed, fourteen ounces and a half (the normal weight being four ounces and a half to six ounces), but some of this excess was lost by subsequent drainage of serum; its substance was pale, gave no amyloid reaction; its ureter was slightly hypertrophied, and the vesical orifice enlarged and patent. The tissues around the right kidney were much thickened and infiltrated by inflammatory material, the capsule being thickened and adherent to the surrounding structures; the finger passed through the sinus in the loin into the pelvis of the kidney and down towards the ureter; very little kidney structure remained anteriorly; the cortical and medullary portions were diminished in size, and the calyces enlarged. The ureter was shortened, its calibre much diminished, its walls thickened and bound down throughout by firm adhesions; the canal was, towards its lower part and at its vesical orifice, partially obliterated by adhesions of its mucous surface, which, however, were easily broken down with a probe. The bladder was somewhat hypertrophied, but otherwise fairly healthy. The membranous and prostatic portions of the urethra were much dilated, and communicated by a funnel-shaped opening with the perineal fistula, but the stricture of the urethra was completely cured. No calculus or calculous deposit was found, nor was there any purulent deposit, nor the slightest granulating surface found throughout the whole of the tract from the sinus in the loin to the fistula in the perineum.

Although the history of this case terminates with the death of the patient, we think Mr. Puzey may claim that the operation was not in any way the cause of death, but that, on the other hand, it prolonged life, gave great relief, and would most probably have resulted in a complete cure had it not been for the diseased condition of the liver.—*Lancet*, Feb. 7, 1880.

Nephrectomy.

The subject of surgical interference in unilateral renal affections is daily coming more to the front. There are two distinct operative measures here involved—the one consisting in incision into the organ for the relief of pyelitic abscesses or the release of renal calculi; the other in the removal of the whole diseased organ for tumour, calculus, or suppuration. The former class of case is to be styled nephrotomy, the latter nephrectomy. Professor CZERNY, of Heidelberg, has recently recorded in the *Centralblatt für Chirurgie* two operations of the latter kind—one successful, the other not so; and a reprint of his brief memoir is now before us. He admits that in certain cases there can be no question now as to the propriety of the operation of extirpation of the kidney, but that the matter is narrowed to the discussion as to which method should be followed—that of extra-peritoneal operation by incision in the loin, or that of intra-peritoneal by abdominal section, as for ovariotomy. He refers to the successful issue of a case by Professor Martin, where the organ was removed by laparotomy; and also to similar success obtained by Zweifel, who removed a healthy kidney in a case of uretro-uterine fistula. His own two cases were—one of renal carcinoma removed by modified abdominal section through the loin, and one of pyonephrosis by lumbar incision. The former case, which proved the more formidable, from the nature of the growth, was unsuccessful. Here is the record of it: A wine merchant, fifty years of age, had suffered for two years from a slightly movable, but painful, tumour of large size, projecting from beneath the left costal arch, and occupying the left half of the abdomen. Its renal nature was verified by injecting the colon with water, and finding that the gut lay in front of the swelling. Having explained the gravity of the case to the patient, and informed him that the chances of recovery after operation were about fifty per cent., Professor Czerny was allowed to attempt the only measure that seemed to give any chance of prolonging life. Making the lumbar incision as for colotomy, he divided the outer layer of the mesocolon, and stripped its capsular investment from the tumour. The growth proved to be so soft as to break down under the attempts at removal, and it had further infiltrated the inner layer of the mesocolon. Most profuse hemorrhage set in, which could only be controlled by pressure on the aorta, and before the operation could be completed a ligature had to be placed round that vessel to obviate death from hemorrhage. Two hours later there was anæsthesia and paralysis of the lower limbs, and death took place ten hours after the operation. The post-mortem examination showed that the renal artery had been severed, and that the ligature on the aorta had been placed between the right and left renal arteries, controlling the flow through the latter, but not through the former. The second case was that of a woman, thirty-two years of age, who for four years had suffered from painful micturition. A month before coming under notice an abscess pointed beneath the eleventh rib on the right side. It was opened, and an intermittent discharge took place from it; and it was noticed that when the discharge from the abscess was free the urine was clear, but that much pain, some pyrexia, and pus in the urine ensued whenever the abscess ceased to discharge. A diagnosis of right pyonephrosis, with perinephritic suppuration, and some vesical catarrh, was made. On May 22, 1879, Prof. Czerny laid open the fistula parallel to the rib, and, enlarging the wound downwards, inserted his hand and felt a soft placenta-like mass. He then resected a portion of the eleventh rib subperiosteally, and fairly exposed the diseased kidney, which was enlarged to three times the normal size, and was imbedded in old blood-clot. Before the organ could be removed it was found necessary to take away another portion of the rib—in all about nine centimetres. He next detached the upper part of the kidney, thereby exposing the cavity of an abscess which gave issue to much pus. A ligature was placed on the vessels on the hilus and the removal of the organ completed; the wound being washed with a five per cent. solution of chloride of zinc and dressed with thymol-gauze. No fever followed, the ligatures came away on the 14th of June, and the patient made a good recovery, although the wound had not quite healed when last seen on Sept. 14th.

From these two cases Czerny concludes that both methods of extirpation are justifiable, but that, *cæteris paribus*, the extra-peritoneal operation is the less severe one. It—*i. e.*, lumbar nephrectomy—should be adopted when the organ is not too much enlarged and is fixed. If it be movable laparotomy may be preferred. In his second case the vertical incision was made along the anterior margin of the quadratus lumborum, and the resection of the rib was had recourse to in order to enlarge the wound sufficiently to permit the passage of the hand. He points out that all risk from the resection is obviated by its being made on the subperiosteal plan.—*Lancet*, Feb 21, 1880.

Injections of Ergotin in Prolapsus of Rectum and Hæmorrhoids.

At the meeting of the Therapeutical Society in December (*Gaz. Hebd.*, January 2) Dr. **Ferrand** related the case of a lady, thirty-five years of age, who during three years had suffered from rectal and hæmorrhoidal prolapsus to the extent that she could not walk about a room without a tumour almost as large as a fist descending, inducing most acute suffering. The tumour could be reduced, whilst lying in bed, by means of a prolonged and very painful taxis, which had to be repeated after every stool. Having tried all the usual remedies in vain, Dr. Ferrand performed a subcutaneous injection of ergotin, depositing 1 gramme 20 centigrammes of a solution composed of glycerine and water āā 15, and alkaline hydrated extract of ergot 2 parts, in the ischio-rectal fossa beside the hæmorrhoidal projection. Considerable amelioration resulted, and three other injections were practised at intervals of twenty days, ten days, and a month, with the result of effecting a cure. The patient was seen six months afterwards, and it was found that the prolapsus was not reproduced in walking, going up many flights of stairs, etc. Dr. **Vidal** related a case in which a complete cure of hæmorrhoidal prolapse which had resisted all treatment was effected by means of twenty-two injections of Bonjean's ergotine (one part to five of distilled water), in quantities gradually increased from fifteen to twenty-two drops. In two other cases which he has since treated, five and six injections sufficed. Dr. Vidal latterly has preferred, however, Yvon's solution of ergot to Bonjean's ergotine as causing less pain.—*Med. Times and Gaz.*, Feb. 14, 1880.

Articular Tuberculosis.

Brissaud (*Revue Mensuelle de Médecine et de Chirurgie*, June, 1879) collects several cases already published by Cornil, Laveran, Roux, and Köster, and gives some additional cases of his own. From an examination of all, he divides articular tuberculosis into three groups, upon an anatomico-pathological basis. In one, there is confluent granular infiltration in the synovial membrane; in a second, the tubercles are more scattered, but yet isolated; in the third, they become welded into a caseous mass, and granulations are but seldom apparent. M. Brissaud considers that these three forms correspond with three clinical varieties. The first form of granular infiltration corresponds to acute tubercular arthritis, which is generally a part of a veritable tubercular intoxication, an acute phthisis. The second, or inflammatory articular tuberculosis, as it is also called, corresponds to rapid articular phthisis. This form may be compared to galloping phthisis of the lung, being characterized by rapidity of attack and of destruction; but with this reservation, that the joint-affection may become chronic and even recover. The third form, or fungating articular tuberculosis, with caseous degeneration, corresponds to chronic articular phthisis, that is, to the most common form, the tubercular white swelling.—*Lond. Med. Record*, Feb. 15, 1880.

Malignant Osteomyelitis and Sarcomatous Diseases of the Bones in Pernicious Anæmia.

Grawitz (Virchow's *Archiv*, Band lxxvi.) describes three cases. In the first case, the patient was a man aged 31, who fell ill with symptoms of pernicious anæmia after recovering from typhus. There was no fatty degeneration of the heart, no retinal nor cerebral hemorrhage. On the other hand, there was general disease of the marrow of the bones, which was changed into red marrow, rich in cells, with numerous transformation forms. In addition to this there was a multiple development of tumours in the base of the skull, in the bodies of the vertebræ, ribs, and sternum, as well as in the long bones which were examined, with apparently metastatic tumours in the liver, in the right suprarenal capsule, and in the peritoneum. The tumours were found to be round-celled sarcomata, very rich in cells, corresponding for the most part with Virchow's lymphosarcoma; the tissue could with difficulty be microscopically distinguished from the red medullary tissue. Grawitz is of opinion that an increase of the so-called lymphoid change, following the anæmic dyscrasia, gave rise to the formation of metastatic tumours to a certain extent parallel in formation to leukæmic growths; an opinion which is essentially supported by the generalization of the tumours in the whole osseous system, as if on a pernicious focus, by their similar structure to that of the red medullary matter, and, finally, by the early stage of these tumours generally. Of the two other cases, one is described by Litten (*Berl. Klin. Wochenschrift*, 1878, No. 19) as leukæmia following on pernicious anæmia. Grawitz differs from Litten, inasmuch as he considers the change of the marrow of the bones, which showed a purulent grayish part of soft and almost fluid character, as the indication of malignant osteomyelitis, which led to death under the appearance of pernicious anæmia, whilst he regards the medullary leukæmia of this case as a by-product. He points out, also, as malignant osteomyelitis, a third case of typical pernicious anæmia, which ran its course without fever, in which, alongside of the customary anatomical changes, was found an extensive change of the marrow in most of the long bones into a soft quasi-purulent substance, rich in cells, with concurrent thickening of the cortex, especially in the tibia and humerus. The periosteum in a few places showed small sarcoma-like tumours, and one was found in the marrow of the right femur.—*Lond. Med. Record*, Feb. 15, 1880.

Case of Non-Syphilitic Diffuse Periostosis.

Dr. LE DENTU (*Revue Mensuelles de Médecine*, Nov. 10, 1879, p. 883) describes a very remarkable case of non-syphilitic diffuse hypertrophy of the bones of the face and skull, a singular affection of which the text-books give but rarely any notice, and which, in the form here described, is certainly very unusual. The case itself is well worth reading as described by M. Le Dentu; though its nosology does not appear to us decided. His concluding propositions are these. 1. Diffuse periostosis of the bones of the face and skull is an affection characterized by benignant hyperplasia of the periosteum, ending inevitably in ossification. 2. It may appear at once in the bones of the skull, but most frequently it attacks first those of the face, especially the maxillary bones, and extends thence to the skull. Its development is usually symmetrical. 3. It is exceptional that it should commence in the inferior maxillary bone; it usually arises in the superior maxillary bone. 4. In all known cases save one, the disease was developed in youths or quite young people. 5. Its progress may be rapid in the period which precedes ossification. It is in its entirety generally slow, and it lasts for several years. 6. Not painful in itself, it may occasion suffering by giving rise to compression of the nervous trunks. 7. Frequent attacks of erysipelas have in one instance given to the disease a special physiognomy, but this peculiarity cannot be considered usual. 8. The gravest and most common consequences observed up to this date are, difficulty of alimentation, and of the articulation of sounds, obliteration of the nasal fossa, abolition of hearing, blindness accompanied by exophthalmia and suppurative destruction of the eyeball, various cerebral symptoms, mental alienation (meningeal apoplexy). 9. Death is generally determined by defective nutrition and cerebral disturbance. 10. No method of treatment can be recommended as being certainly efficacious. Notwithstanding there seems reason to think that the thermo-cautery might act favourably, if employed in quite the first period of the illness. The diffusion of the lesions contra-indicates operation with the knife. The utmost that could be suggested would be to remove the diseased part while there is still only one bone invaded; but there is reason to fear that the operation would not prevent the disease from showing itself at other points, and from resuming its progress, although for the moment interrupted.—*Lond. Med. Record*, Feb. 15, 1880.

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Aneurism of the Subclavian Artery treated by Amputation at the Shoulder-joint, and the introduction of Needles into the Sac.

At a recent meeting of the Royal Medical and Chirurgical Society, Mr. CHRISTOPHER HEATH read a paper on this subject. After reviewing the recorded cases of amputation at the shoulder-joint for aneurism of the subclavian artery, the author narrated his case: A man, aged forty-eight, subject to fits and paralyzed on the left side, was knocked down in the street on Sept. 12, 1878, and sustained a comminuted simple fracture of the left clavicle, and had several ribs broken, including, as was found afterwards, the first rib. The patient was admitted into University College Hospital for treatment, and was made an outpatient Sept. 29. He was readmitted on Oct. 31st on account of a pulsating swelling occupying the posterior triangle on the left side, which proved to be an aneurism of the third part of the subclavian artery. It being impossible to compress the artery between the heart and the aneurism, which rapidly increased in size, Mr. Heath amputated the paralyzed arm at the shoulder-joiut on Nov. 4th with antiseptic precautions, tying the axillary artery with a catgut ligature. There was secondary hemorrhage to the extent of four ounces ten days after, when the antiseptic dressings were necessarily abandoned. The patient made a good recovery, but the effect on the aneurism, if any, was so transient as to be practically *nil*. The aneurism continuing to increase in size, a leaden shield was moulded to it for support. On two occasions a grain of ergotin was injected into the subcutaneous tissue without benefit. On Jan. 1st, 1879, Mr. Heath introduced into the sac three pairs of fine sewing needles, making each pair cross within the sac. Considerable clotting of blood took place around the needles, which were withdrawn on the fifth day. The aneurism gradually became solid, but bronchitis supervened, and the patient sank on January 18th. The post-mortem examination showed the aneurism to be cured, the sac being nearly full of dense fibrine, and communicating with the subclavian artery by a very small aperture close to the broken first rib. Mr. Heath concluded that Sir William Fergusson's suggestion of amputation at the shoulder for aneurism is not a satisfactory proceeding, and recommended the introduction of fine steel needles as having all the advantages of wire or horsehair, with the gain of ready removal without hemorrhage.

The President, Mr. ERICHSEN, in thanking the author, pointed out that two distinct points had been raised in the paper—viz. (1), as to the value of Sir W. Fergusson's operation in such cases, and (2) as to the *modus operandi* of needles or other solid substances introduced into aneurismal sacs.

Mr. HOLMES said that it must be allowed that Mr. Heath had to contend with great difficulties. At any time the treatment of subclavian aneurism was difficult, but here the vessel was probably much injured, the aneurism being apparently of traumatic origin. A few cases might be cited in which recovery had taken place, but they were mostly axillary rather than subclavian, allowing of the application of pressure on the proximal side. As to the value of Sir W. Fergusson's operation in such cases, it is quite possible that some may not be amenable to this procedure. But in Mr. Spence's case, quoted by the author, the patient lived four years after the operation. In Mr. Holden's case it was true no benefit resulted, but there was no harm done, and the patient was almost *in extremis.* Sir. W. Fergusson's method allowed the surgeon to trace the vessel in the stump up to the sac and tie it there, and it was possible that this might be done with benefit in some cases. As to other measures he (Mr. Holmes), relying on Langenbeck's advocacy, had given ergotin a fair trial, but had found it utterly useless. Nor could he conceive the *rationale* of the use of ergotin, for it seemed absurd to argue from the effect of the drug on unstriped muscular fibre to its supposed effect on the walls of an aneurism. He had tried it in five or six cases. He agreed that needles were preferable to iron wire or horsehair, the use of the former of which caused the death of Mr. Moore's patient. But he had no experience on this head. Lastly, he would suggest that surgeons should not be daunted by the failures that had attended Fergusson's plan, for it gave a near access to the mouth of the sac.

Mr. WILLETT said that Mr. Holden in his case performed a preliminary ligature of the axillary artery. There was very slight loss of blood at the operation. In that case it had occurred to him (Mr. Willett) that ligature of the carotid (the aneurism was in the right subclavian), either simultaneously with the subclavian ligature or shortly after, might have been of service. In favour of this was the fact that pressure on the carotid manifestly diminished the pulsation in the aneurism, when this pulsation increased again ten days after the operation. Since then he had had under care a case much like that of Mr. Heath's. Tufnell's diet was enforced, and then the arm was firmly bandaged, a tourniquet placed on the distal side, and firm pressure applied by a shield over the aneurism. Death took place from rupture of the sac, but had this not unfortunately occurred Mr. Willett had intended to perform Fergusson's operation, and at the same time to tie the common carotid artery.

Mr. MORRANT BAKER trusted that Mr. Heath's case would not act as a discouragement to those who wish to carry out Fergusson's operation. The acute suffering experienced in these cases, and the fact that permanent good so rarely followed other measures, pointed to necessity for recourse to this operation. The traumatic origin of Mr. Heath's case, and the probability that the aneurismal swelling was mainly due to extravasated blood, made the case one which could hardly be expected to be much benefited by amputation at the shoulder. The good effects of the introduction of the needles were doubtless largely aided by the previous amputation lessening the volume of blood in the aneurism. He did not think, therefore, that there was sufficient experience upon which to say that Fergusson's operation was not justifiable in such cases.

Mr. ERICHSEN agreed with Mr. Holmes and Mr. Baker in thinking that Fergusson's operation should not be discouraged by the results of these four cases, for the principle of the operation was physiologically and pathologically correct, and it could not be judged solely on clinical grounds. It involved the principle that if the vessel cannot be tied on the cardiac side of the aneurism, ligature on the distal side gives an opportunity for recovery. The removal of the limb restricts the flow of blood through the sac, for it does away with the need for collateral circulation. Mr. Spence's patient lived four years after the operation, and it was difficult to imagine that this did not have some influence, especially as the aneurism appeared to be one of the first or second part of the subclavian, and therefore not a favourable case for operative procedure. In Mr. Holden's case the operation was done as a *dernier ressort.* Mr. Heath had to deal in his case with an aneurism possibly of traumatic origin, associated with fractured clavicle. It seemed to partake of the character of a false circumscribed aneurism. Thus one of the four cases seemed to derive benefit; of another (Mr. Smith's) there was no evidence as to benefit or otherwise; whilst in the other two the disease had advanced so far, and the aneurism had such a very false sac, that scarcely any operation could be expected to produce any great good. These cases alone could not justify surgeons in discarding Fergusson's operation. But if had recourse to, it should be done early. For if these cases do not yield to ordinary treatment they generally become rapidly fatal, and the only chance of recovery then is to tie the artery as near to the external orifice of the sac as possible. As to introduction of foreign bodies into the sac to promote coagulation, he was of opinion that needles, which could be removed, were preferable to wire or horsehair. For in the latter cases—supposing recovery to take place—what would become of the foreign body?

Dr. ANDREW asked whether distal ligature might not in itself lead to harm. Cases occurred especially of cerebral embolism in young people, where the obstruction of an artery is followed by the formation of an aneurism on the cardiac side of the obstruction.

Mr. HEATH was glad to hear the consensus of opinion as to the propriety of the operation, which, however, he did not think did any good in his case. Careful perusal of Mr. Spence's case showed that it had but little effect on the sac itself. In Mr. Holden's case the patient was *in extremis*, but the sac gave way; and so in Mr. H. Smith's case, where an intrathoracic portion of the aneurism ruptured. Mr. Baker had referred to a case under Mr. Hulke's care. That patient had been previously seen by Mr. H. Smith, who proposed amputation. He then came under Mr. Hulke's care at the Middlesex Hospital, where an apparent cure was effected under diet, etc. He had looked up the authorities on the subject before coming to a conclusion. He was not aware of any case where the carotid had been ligatured, except one recorded by Butcher in his "Operative Surgery," where that vessel was secured by mistake. He was glad to hear that Mr. Holmes had not found any good effect from ergotin. The effect of the needles in his case was good, and had he known that the aneurism was so sacculated, he should have inserted more than he did, for he thought this a procedure which might be more widely pursued. The risk of hemorrhage from the insertion of fine needles was very slight; and the risk of the carrying any of the clot into the general circulation was no more than occurs under any form of treatment. Attempts to produce coagulation by the injection of fluids into the sac had been proved to be disastrous.—*Lancet*, Jan. 31, 1880.

Aneurism of the Left Hypogastric Artery.

Crisp has collected 105 and Lebert 103 cases of aneurism of the abdominal aorta and its branches, but among them is not a single one of aneurism of the hypogastric artery. This appears then to be so great a rarity that we copy from the *Bresl. Artzl. Zeitschrift* and *St. Petersburger Med. Wochenschrift*, No. 51, 1879, the report of such a case by Dr. BINSWANGER. The case occurred in an old woman of sixty-five, who died after two days' residence in the hospital. She presented œdema of both labia and lower extremities; complained of severe abdominal pain, and died after lying there two days in a semi-conscious condition.

On post-mortem examination an extensive endarteritis deformans was found in the abdominal portion of the aorta, the pelvic arteries, and the arteries of the lower extremities, while the vessels of the upper half of the body appeared healthy. This endarteritis had led to numerous cylindrical and sac-like dilatations of the terminal branches of the abdominal aorta, especially the common iliac and the right iliac. Besides these, a large aneurism, the size of the fist, had formed at the point of emergence of the gluteal and ischiatic arteries (anterior and posterior divisions?) from the left hypogastric. The entire wall of this latter vessel was involved. It lay deep in the iliac fossa, and had become firmly attached to the left ureter, the intestine, and the hypogastric vein. It was covered with peritoneum, and presented a rent on its anterior surface, hemorrhage from which was the cause of death. The entire sac was filled with old colourless blood-clots. The aneurismal attachment to the left ureter and the compression of the latter had led to a consecutive hydronephrotic dilatation of the renal pelvis, a collection of concretions there, and multiple abscesses of the kidney tissue.

In reporting this case in the *Cincinnati Lancet and Clinic* (Feb. 21, 1880), Dr. P. S. C[onner] states that, so far as he has been able to learn, but one case of aneurism of the internal iliac has heretofore been reported (Sandifort, *Tabulæ Anatomicæ*, etc., Leyden, 1801). Broca (*Aneurysmes*, Paris, 1856) says: "If we should meet with an aneurism of the internal iliac, and if it should be diagnosticated, the primitive iliac artery ought to be tied. But the case has not yet presented itself. I do not know of a single example of aneurism developed *in the pelvis* upon the branches of this artery." In the museum of the Royal College of Surgeons, London, there is a specimen of aneurism of the pudic artery.

Treatment of Popliteal Aneurism by Esmarch's Bandage.

At a recent meeting of the Clinical Society of London (*Lancet*, Feb. 21, 1880) Mr. CHRISTOPHER HEATH read a paper on two cases of popliteal aneurism cured by the application of Esmarch's bandage. Case 1. A coal miner, aged thirty-two, admitted into University College Hospital on October 22, 1879, with a right popliteal aneurism, attributed to his working in a cramped position. No history of injury, sudden strain, or syphilis. He had had pain in the ham ten weeks before admission, and soon after the swelling appeared, which gradually enlarged to the size of a hen's egg. The right posterior tibial pulse was not perceptible. On Oct. 25th, at 3 P. M., half a grain of morphia was injected subcutaneously, and Esmarch's bandage applied to the leg as far as the lower border of the sac. A piece of Martin's bandage was then applied to the thigh from above down, and over it the elastic cord of Esmarch was fixed. The aneurismal sac was thus rendered tense and full of blood. At 4 P. M. bichloride of ethylene was administered and kept up till 6 P. M., when the tourniquet and bandages were removed, the former first. There was no pulsation, but an hour afterwards slight impulse could be felt. A Carte's compressor was then kept on the femoral till 9 A. M. next day. There was no recurrence of pulsation, and on Nov. 14th the case was shown to the Society. He then presented a hard, ovoid, non-pulsating swelling in the ham; and an enlarged artery could be traced on the inner side of the thigh and ham; the posterior tibial pulse could not be felt.

Case 2. A potman, aged thirty-seven, muscular and healthy, without signs of general vascular degeneration. His aneurism was longer and narrower than the other, and, there being no bruit, it was thought to be fusiform. Pain in the popliteal space had existed for six weeks. There was no history of syphilis, but he had rheumatic fever in 1874. On Dec. 3, 1879, Esmarch's bandage and tourniquet were applied for three and a half hours, the patient being under the influence of bichloride of ethylene. Pulsation immediately returned on removal of the bandage. An attempt to compress the artery by Carte's tourniquet failed from the pain caused by it. On Dec. 4th digital compression was tried from

1.30 P. M. to 4.30 P. M., and flexion from 4.30 to 11 P. M. On the 5th pain, but still pulsation in the tumour, and flexion again had recourse to for four hours. On the 8th Esmarch's bandage was applied for three and a half hours, followed by flexion for six hours. On the 9th the tumour was harder, but still expansile. On the 10th no pulse could be felt in the posterior tibial, and an enlarged artery was observed on the inner side of the patella. There was much pain in the leg. The tumour was consolidated, and recovery was established.

In the first case one application of three hours practically sufficed for the cure, which was complete two weeks afterwards. The second case required a reapplication, and Mr. Heath laid stress on the fact that at the first trial the tension in the sac was but slight. No bandage was placed over the aneurism, and the elastic band was adjusted over the thigh. Of the four cases reported last year by Mr. Hutchinson, in only one was solidification complete, and in three out of the four cases recourse was had to digital compression. Mr. Hutchinson points out that the bandage was only applied for one hour, and no attempt was made to empty the sac. Mr. Heath urged that any diminution of the contents of the sac would tend to prevent coagulation; for he was under the impression that a sac filled with blood under high pressure would have its contents more rapidly coagulated. An attempt he had made to prove this experimentally had, however, yielded negative results.

Mr. Sydney Jones said that the cases showed that Esmarch's bandage could be kept applied for three hours without any serious detriment to the nutrition of the limb. He had used the bandages in three cases of aneurism; one axillary, without success; the others popliteal, with success. But he had only kept on the bandage for one hour in each case, and in two cases its use was followed by digital compression, and this again in one instance by the reapplication of the bandage. He applied it tightly over the leg from the foot to the knee, then loosely over the aneurism, and again more tightly over the thigh, where the ligature was put on. He thought that allowance should be made for the contraction of the sac, which was shown by Hunter to follow on his plan of ligature.

Mr. Croft had reported a case of popliteal aneurism cured by the interrupted bandage in January, 1878. The bandage was left on for one hour, and within six hours the aneurism was absolutely solid. Since then he had treated another case. The patient was a man thirty-six years of age, who had had syphilis, and who had noticed the swelling in the ham (which was of the size of a small orange) for ten weeks. The interrupted bandage was applied for an hour, when, pulsation recurring, digital compression was had recourse to, and kept up for two hours and a half, when the cure was completed. He asked what was the least amount of time during which the bandage could be applied for cure; for its lengthened application, added to the prolonged influence of anæsthetics, could not influence the case for good. In his own two cases one hour's application sufficed, but it seemed that in Mr. Heath's case even three hours and a half was inadequate. Then he thought the prolonged use of anæsthetics may retard coagulation. It was not necessary to get complete coagulation to effect a cure; semi-coagulation might start the complete process.

Mr. T. Smith agreed with Mr. Jones that Mr. Heath's cases proved that a limb could be deprived of its blood for three hours without injurious effect. This was important, for under an opposite belief he (Mr. Smith) had limited the time of application to one or one and a half hours, and then varied it with the tourniquet. It was an important matter of detail to apply the India-rubber band *over* the bandage, as the risk of injuring the nerve-trunks by the pressure of the ring was thereby obviated. He had treated five cases by this method, and had noticed that sometimes the rapidly formed clot was not permanent. Thus on three separate occasions he had known a clot to disappear, so that ligature had to be had recourse to. No doubt there were differences in the composition of the blood favouring coagulation or otherwise, and thus the time required for consolidation to take place would vary in different cases. As to the influence of anæsthetics on the blood, he said that the case of most rapid coagulation he had seen was one where no anæsthetic was had recourse to (other than a pipe of tobacco and the evening paper). The patient was a member of our profession, and consolidation occurred within two hours.

Dr. MAHOMED suggested that coagulation might be promoted if an aneurism rendered tense and full of blood by the use of the bandage, as described by Mr. Heath, were punctured with the galvanic needle, or were injected with substances to favour clotting—*e. g.*, perchloride of iron.

Mr. MORRANT BAKER said that he had contributed details of a case treated without anæsthetics in the last volume of *St. Bartholomew's Reports.* The bandage was kept on for an hour, when, pain being severe, digital compression and then a shot-bag were applied to the femoral artery, then the bandage for another half an hour, and, lastly, digital compression for the second time, when consolidation occurred. The question of the effect of anæsthetics on the blood was important, and he asked Mr. Heath whether he was guided by this in choosing bichloride of methylene. The strong cardiac stimulant action of ether might require more pressure to be applied to arrest the flow of blood.

Mr. T. Smith was reminded by Mr. Baker's remark that in the case he had mentioned, where no anæsthetic was used, it was found almost impossible to compress the artery until the patient was smoking tobacco.

Mr. Croft said that in his two cases no anæsthetic was inhaled; the patients only had one-third of a grain of morphia injected subcutaneously.

Mr. Heath, in reply, said that the anæsthetic used in his cases was the bichloride of *ethylene*—a safer preparation than the methylene compound. He could not agree that the anæsthetics had much influence; and it was most important to relieve pain, which was one evidence of the cure being effected. Both his cases were small aneurisms, well known to be more difficult of cure than large ones; and one of them was distinctly fusiform. But he quite agreed with Mr. Hulke as to the risk involved by heightening the tension in the case of thin-walled and degenerate sacs. He attributed the first failure in Case 2 to the fact that the sac was not rendered tense; for in Case 1, where it was made so tense that subcutaneous ecchymosis occurred, the cure was rapidly effected. Therefore, on the second trial in Case 2 he made the sac tense. The mode of cure differed from that which takes place after ligature, where no doubt some contraction of the aneurism may take place. But here coagulation involves the whole contents of the sac at one time. Broca believed such a "passive clot" to be dangerous, from its liability to break down and lead to embolism; but it had been otherwise proved clinically; and Mr. Heath believed the readiest way to insure the formation of such a clot was to keep the sac distended with blood. The application of the bandage for three hours was purely empirical; but as to any effect on nutrition of the limb, every surgeon must have seen cases where the blood has been cut off from a part for quite as long a time without any ill result. When the subject was under discussion last year, Mr. Bryant said that he had had a case where gangrene ensued probably from a portion of clot being washed away; and it was remarkable that no such untoward results followed in the three cases mentioned by Mr. Smith when the clot disappeared. The tourniquet was removed before the bandage because it overlaid this; and the support given by the bandage would prevent any tendency of the clot being detached when the blood-flow recommenced. He would be loath to supplement these measures by electro-puncture, from which he had not seen any good results. Simple steel needles might be used, but their use would destroy that which it was his aim to secure—viz., heightened tension of the sac.

Nerve-Stretching for Neuralgia of the Trigeminal Nerve.

Kocher (*Correspondenzbl. für Schweizer Aerzte*, 1879, No. 14) describes the case of a man aged 32, who had already suffered from acute neuralgia of the supra-orbital nerve for 14 years, and on whom exposure and stretching of the nerve was performed with immediate and permanent result. Total anæsthesia set in, and disappeared after three months without any return of the pains. The author believes that nerve stretching has a future also for the other branches of the trigeminus, even when they cannot be followed to the base of the skull.—*Lond. Med. Record*, Feb. 15, 1880.

OPHTHALMOLOGY AND OTOLOGY.

New Method of Performing Sclerotomy.

Dr. George Martin (*Annales d'Oculistique*, Novembre–Decembre, 1879) considers that none of the usual methods of performing sclerotomy are altogether satisfactory. The large scleral incision in Inaligno's operation, in spite of eserine, is often followed by prolapse of the iris, while the subconjunctival sections, recommended by Bader and Spencer Watson, not unfrequently lead to the production of staphylomata. The double incisions practised by De Wecker and by Hock of Vienna are too difficult for general use. To obviate these drawbacks, the author proposes to empty the anterior chamber so gradually as to cause no displacement of the pupil. This he accomplishes by a preliminary puncture with Desmarres' paracentesis-needle. Once the fluid evacuated, the *vis a tergo* of the ocular contents press the iris against the membrane of Descemet, and retain it firmly in its place. The preliminary incision or puncture should be made at a distance of from one to two millimetres from the cornea. If the needle be held parallel to the iris, the puncture may be made under the upper lid as in paracentesis, and all instruments of fixation dispensed with. The wound is then enlarged by a few snips with curved scissors, until the total length of the incision reaches 6 or 7 millimetres. Eserine should be used both before and after the operation. The author alleges that his method diminishes the chances (1) of prolapse of the iris, and (2) of intraocular hemorrhage. It is only applicable in cases where the tissue of the iris is healthy, and where the pupil responds to the stimulus of a myotic.—*London Med. Record*, Feb. 15, 1880.

Enervation of the Eyeball.

M. Warlomont (*Annales d'Oculistique*, Novembre–Decembre, 1879) gives a historical *resumé* of the literature of this operation, and recommends the following method of performing it. The patient being thoroughly anæsthetized, an incision should be made through the conjunctiva at a distance of 7 or 8 millimetres (0.275 to 0.03 inch) from the external margin of the cornea and parallel to it. This primary incision may also be carried at once through the capsule of Tenon. A strabismus-hook is next introduced under the tendon of the external rectus, and two curved needles armed with catgut are passed through its substance. The tendon is divided at a point midway between the two needles, and the two loops of catgut are tied together. The subconjunctival tissue is then freely divided down to the optic nerve, and this latter is cut with blunt scissors, in order to lessen the risk of hemorrhage. The globe is next dislocated inwards and forwards by means of the thread passed through the end of the rectus tendon, and, the entrance of the nerve being thus exposed to view, all the branches of the ciliary nerves are carefully and thoroughly divided. The eyeball is replaced as soon as all hemorrhage has ceased, a suture being formed by drawing tight the two loops of catgut. The wound is dressed antiseptically, and a compress bandage and cold applied. The author considers that the use of blunt scissors, which bruise rather than cut the central artery, is a practical point of considerable importance, seeing that hemorrhage, with consequent suppuration, is one of the chief dangers of the operation. Up to the present time thirty-six cases where enervation has been performed instead of enucleation are on record. The results have not in all cases been made known, and therefore no satisfactory statistics can yet be obtained. The author thinks the operation is by no means free from danger, and that it must be employed with judgment and only in suitable cases. It cannot, at any rate as yet, be looked on as a substitute for enucleation.—*London Med. Record*, Feb. 15, 1880.

Tetanus produced by the Presence of a Foreign Body in the Conjunctival Sac.

Dr. SAMELSOHN, of Cologne, records (*Centralblatt für Augenheilkunde*, Nov. 1879) an extraordinary case of tetanus supervening on the irritation produced by a small piece of wood which had become lodged in the conjunctival sac. The spasms, which began in the eyelid, passed after some days to the other facial muscles of the same side, and eventually included the muscles of the trunk and both lower extremities, so that six days after the extraction of the foreign body the patient was in a state of complete general tetanus. When he first presented himself, pressure over the points of entrance of the supra- and infra-orbital nerves seemed to Dr. Samelsohn to diminish the blepharospasm, and he accordingly suggested neurotomy, to which, however, the patient did not give his consent. The same pressure had no effect after the tetanus had become fully developed, and the prognosis was for some time doubtful. The patient, however, slowly recovered, the tetanic contractions disappearing in the reverse order of their appearance.—*Edinburgh Med. Journal*, Feb. 1880.

The Conjunctivitis and Otitis of Hay-fever.

GIFFO (*Thèse de Paris*, 1879) draws attention to this form of conjunctivitis, of which the three principal symptoms are: itching of the eyelids, weeping, and photophobia. The ordinary treatment of catarrhal conjunctivitis would be useless in such cases, but a notable amelioration is obtained by the habitual use of eserine. The catarrhal otitis consecutive on the coryza of hay-fever is accompanied by obstruction of the Eustachian tube, and is especially ameliorated by catheterization.—*London Med. Record*, Feb. 15, 1880.

MIDWIFERY AND GYNÆCOLOGY.

A Successfal Case of Laparo-Elytrotomy.

Dr. WALTER R. GILLETTE, Physician to the N. Y. Lying-in Asylum, reports (*Am. Journ. of Obstetrics*, Jan. 1880) a successful case of laparo-elytrotomy in a rachitic dwarf, four feet four inches high, and aged 23. She had had more or less pains for a week, and when Dr. Gillette saw her the waters had been discharged eighteen hours. No fœtal heart-sound was to be heard, and the uterus was emphysematous from the decomposition of the fœtus. The inferior strai was capacious, the superior strait was reduced in its whole antero-posterior diameter to a slit one and a half inches in diameter, through which the lips of the os pouted. Beyond the strait the os seemed dilated to about the size of a silver dollar. In the os was a caput succedaneum, through which could be felt a presenting head. Upon consultation laparo-elytrotomy was determined upon and performed. The greatest difficulty was now experienced in effecting delivery, owing to the position of the flaccid fœtus, which was jammed down by the spastic rigidity of the anteverted uterus against the iliac and pubic bones, with the head and face flexed upon and against the right shoulder. The forceps, version, and craniotomy were tried in vain, finally, having crushed the base of the cranium with the cephalotribe, delivery was effected through the incision, and the placenta, to the regret of the operator, immediately followed, together with the fetid grumous discharges that were pent up behind the decomposing fœtus. The uterus contracted at once, and there was no hemorrhage of account. The bladder was not opened in the operation. The patient made a good recovery.

The lesson of this case is that laparo-elytrotomy presents but few of the facilities of Cæsarean section, although it is free from most of its dangers, and that the armamentarium of the obstetrician, in performing this operation, must in the future be increased beyond his scalpel, sound, and ligatures, and blunt hook, to that of the forceps, craniotomy, cranioclast, and cephalotribe. The presence of a dead, decomposing, and flaccid fœtus in a uterus long drained of its waters, in a state of spastic rigidity, is a complication which will perhaps need the intervention of one of these instruments.

Pregnancy in a Uterus Bicornis mistaken for Extra-uterine Fœtation.

Dr. WILLIAM GOODELL reports (*Med. Record*, Jan. 31, 1880) a case in which he, with some doubt, diagnosticated extra-uterine fœtation at the ninth month, and had made the necessary arrangements preliminary to performing laparotomy, but was fortunately deterred by the idea that the alternate contraction and relaxation of the tumour which was observed was evidence of the presence of unstriped muscular fibre, that is to say, uterine tissue, and he concluded to await developments. His patient fell into labour four days later, and was delivered of a small living child *per vias naturales*. Dr. Goodell afterwards very carefully examined the womb, and found it to be a uterus bicornis. In one horn the ovum had developed, and into the other, in making his diagnosis, he had slipped his sound, got a measurement of four inches, and found the womb to be in its natural position, but having to the left and closely adherent, as he thought, a large tumour filled with fluid, and containing a solid body, movable by ballottement.

On the Employment, in certain Cases, of a Caoutchouc Thread for the Ligature of the Umbilical Cord.

In a recent communication Dr. P. BUDIN, of Paris, remarks that secondary hemorrhage from the umbilical cord is rare. But in certain cases in which the cord is big, that is to say, contains in its thickness a great quantity of Wharton's jelly, even though the ligature has been pulled tight, we may see a severe, and even dangerous, hemorrhage follow cries or efforts of the child. He has, therefore, made some experiments to test the efficiency of thread and caoutchouc ligatures. He found, first, that having put two ligatures, one of thread and one of caoutchouc, on the same cord, the next day a probe could be passed between the first-named ligature and the cord, but it was impossible to make it penetrate between the caoutchouc thread and the cord. Next, he tested the resisting power of the ligatures by injecting the vessels of cords which had been tied with the different materials in question. When a ligature of thread had been tied so tightly that great force was needed to make fluid injected into the umbilical vessels flow past it, yet, when the obstacle had once been overcome, a very slight pressure only was enough to make the fluid again pass the ligature. This was not so when caoutchouc was used; the same resistance was met with when the injection was repeated as had been encountered when it was first made. With caoutchouc it is possible to tie so tightly that the resistance offered to the passage of fluid cannot possibly be overcome; the force employed producing, instead, rupture of the vessel. He feared lest the caoutchouc ligature might divide the cord; but he has not found this happen. On account of the readiness with which the caoutchouc ligature slips on the surface of the cord, it is not easy to apply it. To meet this difficulty, Dr. Tarnier has suggested an ingenious proceeding which he calls the "match method" ("*le procédé de l'allumette*"). At the point to which it is desired to apply the ligature, a wooden match is placed on the cord, parallel to its length. The ligature is then tightly tied, including within it both the cord and the match. When the knot is finished, the two ends of the match are seized, and, by pressure on the point where the knot includes it, it is broken in half at that place, and the two pieces easily withdrawn. The caoutchouc ligature was the subject of a communication by Dr. Dickson to the Obstetrical Society of Edinburgh in 1874, but was not received with much favour.—*Obstetrical Journal of Great Britain*, Feb. 1880.

The Etiology of Puerperal Cystitis.

SCHWARZ, of Halle, supports (*Centralblatt für Gynäkologie*, No. 26, 1879) the view that cystitis in lying-in women is a disease which arises by infection. Injuries received during parturition cannot, any more than the mechanical irritation of the bladder and urethra by repeated introduction of the catheter during labour, set up cystitis. Retention of urine must also be rejected as a cause; for spontaneous decomposition of retained urine never occurs. The causes of puerperal cystitis, on the contrary, are: 1. The introduction of phlogogenic material directly into the bladder by the catheter; and, 2. The spontaneous extension to the vesical mucous membrane of inflammatory processes in its neighbourhood. A collection of thirty-two cases of this disease out of about 1100 lying-in women in the midwifery clinique at Halle, a. S., in the years 1868–75, shows that in by far the majority of cases the disease arose from the introduction of infective material directly into the bladder by the catheter. Among these twenty-two cases of puerperal cystitis (twenty of which were simple cystitis, and twelve complicated with pyelitis), only two arose from the extension of inflammation in the neighbourhood; the remaining thirty (in twenty-one quite certainly, in nine with the greatest probability), as a result of the introduction of phlogogenic material by the catheter. Therefore cystitis does not especially affect those lying-in women who have had difficult labours, nor those who suffer from inflammatory affections in the neighbourhood of the urethra and bladder; but such as have been catheterized. Antiseptic measures (especially the entrance of air into the bladder is to be avoided, to do which the catheter should be introduced into the bladder filled with carbolic solution) securely guard against the introduction of infective material. Since 1875 these precautions have been employed in the Halle midwifery clinique, and puerperal cystitis arising from catheterization has become very rare. It must be mentioned that the author accepts the view that the lochial secretion under entirely normal conditions may contain the injurious material.—*Obstetrical Journal of Great Britain*, Feb. 1880.

Myxoma Enchondromatodes Arborescens Colli Uteri.

This is the subject of a contribution of great interest by Dr. GEORGE REIN, of St. Petersburg (*Archiv für Gynäkologie*, Bd. xv. s. 187). The paper reports the history and treatment of a case presenting a form of disease hitherto unnoticed, although two analogous cases have been published—one by Thiede, which he calls papillar fibroma of the vaginal portion of the uterus; and another by Spiegelberg, under the name of sarcoma colli uteri hydropicum papillare. The disease in the present case was attached to both anterior and posterior lips of the cervix. It had an appearance extremely like a mass of uterine hydatids. The mass, when first seen, filled up and distended the vagina, but did not protrude through the hymen; but there was a history of a portion having been propelled through the hymen and having fallen off. Menorrhagia alternating with watery discharge was complained of, also intense constipation and painful micturition. The masses forming the tumour were partly twisted off and partly cut off by an écraseur at two sittings, and the hemorrhages from the surface of attachment arrested by the actual cautery. Part of the tumour was removed on the 5th of March, 1875, and the rest of it on the 10th, by Professor Krassowsky. The patient rapidly improved, and on 5th April left the hospital. But the disease soon returned, and she applied again for admittance on the 1st of September. On this occasion, in addition to the hydatid-like mass attached to what remained of the cervix, and which filled up the vagina, it was found that there was manifest tenderness, and an ill-defined tumour to be felt, on deep pressure, in the left hypogastrium. There were also observed, intermixed with the soft masses composing the tumour which filled the vagina, portions of cartilaginous hardness. On the 29th of September a third operation was performed for the removal of the tumour, as the distress from the stinking discharge and other symptoms was very great; but the patient died a few hours after the operation. It was found, on section, that the tumour had opened into the abdomen by penetrating the left broad ligament, so that some of the solution of perchloride of iron injected to arrest the hemorrhage had passed directly into the peritoneum. Portions of the tumour removed at the second and third operations were subjected to careful microscopical examination by Professor Slavjansky, and were found to present a peculiar combination of the distinctive histological characters of myxoma and of medullary carcinoma. The general appearance of the tumour, and its grape-bunch arrangement was also extremely like that which we perceive in a myxomatous chorion, whilst it is not seen in medullary cancer or in sarcoma.—*Edinburgh Medical Journal*, Feb. 1880.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

On Poisoning by Perchloride of Iron.

Called upon to act as experts in a criminal affair of numerous poisonings by perchloride of iron, Drs. BERANGER-FERAUD and PORTE were obliged, in the absence of all information on the subject, to perform several experiments on dogs, cats, etc., in order to establish the symptomatology and pathological anatomy of this mode of poisoning.

The following is a *resumé* of the results arrived at:—

Poisoning by perchloride of iron may be effected in two different ways, between which there are insensible gradations.

a. By a large dose of salt without corrective, which can weaken its caustic action on the mucous membrane.

b. By a dose mixed with a sufficiently large quantity of liquid in order that its topical action may be almost null.

Its introduction into solid food takes away from the perchloride its poisonous properties.

On the other hand it may be mixed in liquids. It is thus, for instance, that 2 grammes of the salt of iron may be introduced into 250 grammes of punch without giving to the latter a tartness which could cause it to be refused by a professional drinker, or by a man already slightly affected by drinking. The addition of alcohol favours the toxic power of the perchloride, as does also an empty stomach.

The series of phenomena natural to poisoning from a salt of iron commences with a disagreeable impression in the mouth, a taste of green vitriol. Then follows vomiting, which may fail to be present when the individual has taken a considerable quantity of alcohol; the gastric phenomena then confine themselves to anxiety, uneasiness, and epigastric pain.

When the vomiting takes place shortly after the ingestion of the iron salt, frothy matter mixed with a yellowish liquid or sometimes a greenish liquid mixed with alimentary matters is thrown off. But, in all cases, chemical analysis enables us to prove the presence of iron in the material vomited.

Colic appears in from one to three hours after the ingestion, and is accompanied by diarrhœa during the first 12 or 24 hours, afterwards when the patient recovers a marked constipation is apparent.

The stools are black, and no longer have the characteristic fecal odour.

The emission of urine is perceptibly diminished. Cramps and a temporary weakness of the lower limbs are observed; symptoms of encephalic congestion, causing either collapse or delirium, a hippocratic expression, a laboured deep respiration, a weak voice, a tendency to cyanosis of the extremities, and a rapid chilling of the body follow.

At the autopsy is found:—

Marked cadaveric rigidity; in the mouth is a brown or blackish substance like a black dust mixed with the saliva, and which gives on chemical analysis the reaction of salts of iron; the buccal mucous membrane is dry and hard.

It is only when perchloride of iron is given in enormous doses and in a condition of great concentration that it causes in the stomach eschars like those in the case of the patient spoken of by Gubler (*Commentaires Thérapeutiques du Codex*, 2d edition, p. 618), who swallowed 45 grammes of concentrated solution. Generally the stomach contains a brownish or blackish matter, which is nothing but chyme coloured by the reduction of a little of the salt of iron, the colour of which becomes darker by prolonged contact with the air.

The small intestine generally contains a similar substance; the mucous membrane does not present any hyperæmia; the portions which have been in contact with the toxic chyme are rough and dry. The large intestine is in the same condition. The radicles of the vena porta are congested. The liver is increased in size and very hyperæmic. The portal vessels are filled with black and fluid blood; the gall-bladder is distended with bile. Chemical analysis of the liver shows the presence of a very large quantity of iron. The kidneys are much congested, as well as the lungs and the cerebral meninges. The blood is much blacker than in asphyxia; under the microscope the red globules are often misshapen and crenated. When a small quantity of blood is coagulated by heat and then filtered to separate the coagulum, the iron in excess is drawn off with the liquid, which furnishes, without former treatment, all the reactions of the salts of iron. On the contrary, when there has not been any poisoning, it is necessary, in order to find traces of the normal iron, to destroy the red globules by incineration, or to treat the blood with a strong acid.—*Annales d'Hyg. Publ. et de Méd. Lég.*, Avril et Juin, 1879; and *Revue des Sciences Médicales*, Jan. 1880.

INDEX.

A.

Abortion, abnormal adhesion of funis to placenta, a cause of, 73
Abscess of brain, 426
Aconitia in neuralgia, 536
Adams, Dupuytren's Contraction, review of, 219
Allen, treatment of chronic nasal catarrh, 60
Alopecia areata, 544
Amblyopia, tobacco, 473
American Ophthalmological Society's Transactions, review of, 501
——— Otological Society's Transactions, review of, 511
Amyloid degeneration developed within two months, 543
Anæmia, pernicious, malignant osteomyelitis and sarcomatous disease of bones in, 557
Aneurism of scalp, traumatic, 269
Aorta and pulmonary artery, communication between, 253
Arkansas State Medical Society's Transactions, review of, 219
Arsenical poisoning, sub-carbonate of iron as an antidote in, 80
Ascaris lumbricoides, asphyxia from, 258
Asphyxia caused by ascaris lumbricoides, 258
Atlee, death in labour from shortness of pedicle after ovariotomy, 394
——, spontaneous reposition of inverted womb, 139
Atropia, effect of, on eye, 410
———, paralyzing action of, in heart, 532

B.

Baginsky, communication between pulmonary artery and aorta, 253
Bartholow, Spermatorrhœa, review of, 240
Battey's operation, 286
Baudin, gonorrhœal endocarditis, 541
Bemiss, yellow fever, 447
Benzoate of soda, 254
——————— in diphtheria, 260
Berthold, quebracho in dyspnœa, 531
Binswanger, aneurism of hypogastric artery, 561
Bladder, distension of fœtal, causing difficult labour, 281
Blawelt, impacted calculus in an infant, 446
Blood-corpuscles, coloured, development of, 254
Bradley, Lymphatic System, review of, 205
Brain, abscess of, 426
——, enchondromatous tumour of, 490
Breech presentations, ten consecutive, 444
Bristowe, Practice of Medicine, review of, 252
Bronchitis, croupous, 148
Buck, Hygiene and Public Health, review of, 180
Budin, elastic thread for ligature of funis, 567
Bumstead, Venereal Diseases, review of, 193
Burnett, iritis spongiosa, 153
Busey, cyanosis, 159

C.

Cæsarean amputation, utero-ovarian, 282, 335
Calculus, impacted, in an infant, 446
California Board of Health Report, review of, 520
Carbolic spray as a preventive of putrefaction, 83
Carpenter, treatment of leucocythæmia, 535
Catarrh, nasal, treatment of chronic, 60
Cerebral convolutions, 506
Cheadle, exophthalmic goitre, 493
Chloral and camphor in toxic and therapeutic doses, 89
———, effects of long-continued use of, 533
Cholecystotomy, 273
Clark, renal inadequacy, 267
Clarke, Practice of Surgery, review of, 508
Colic, hepatic, treatment of, 543
Comelli, difficult labour from distension of fœtal bladder, 281
Conjunctivitis of hay-fever, 566
Connecticut Medical Society's Transactions, review of, 218
Convulsion, epileptiform, from glandulo-preputial adhesion, 444
Cornil and Ranvier's Pathological Histology, review of, 475
Cranial bones, on fractures of, 91
Cripps, Cancer of the Rectum, review of, 526
Croom, Minor Gynecological Operations, review of, 526
Curschmann, local treatment of putrid expectoration, 261

Cushing, absorption of fibroid of uterus under ergot, 436
Cutter, Dictionary of German Terms used in Medicine, review of, 529
Cyanosis, 159
Cysticercus cellulosæ affecting the skin, 544
Cystitis, puerperal, 568
Czerny, nephrectomy, 555

D.

Diphtheria, benzoate of soda in, 260
——, metastatic tenonitis in, 429
——, outbreak of, in rural districts, 491
Dislocations, diagnosis of, 408
Drainage, through, in treatment of wounds, 305
Duboisia, effect of, on eye, 410, 534
Dugas, diagnosis of fractures and dislocations, 408
Duncan, Diseases of Women, review of, 505
Dyspnœa, quebracho in, 531

E.

Ear affections arising from diseases of the teeth, 17
Eggel, spontaneous expulsion of a fibromyoma, 286
Eichhorst, alopecia areata, 544
Elcan, abscess of brain, 426
Endocarditis, gonorrhœal, 541
Epilepsy, traumatic, trephining for, 269
Estlander, resection of ribs in empyema, 550
Expectoration, local treatment of putrid, 261
Extra-uterine fœtation, pregnancy in uterus bicornis mistaken for, 567
Eyeball, enervation of, 565
Eye injuries, rest in treatment of, 396

F.

Fauqué, duboisia, 534
Fenwick, Practic of Medicine, review of, 529
Feraud, poisoning by perchloride of iron, 569
Fibro-myoma, spontaneous expulsion of a, 286
Findley, neuroma of ulnar nerve, 161
Flint, Clinical Medicine, review of, 199
——, Manual of Auscultation and Percussion, review of, 530
Foster, Physiology, review of, 249
Fothergill, The Heart, review of, 227
Fox, Photographic Illustrations of Skin Diseases, review of, 220
Fractures, diagnosis of, 408
——, treatment of, 277
Fulton, Physiology, review of, 530
Fungus poisoning, 287
Funis, abnormal adhesion of, to placenta, 73
——, elastic thread for ligature of, 567
Fürst, asphyxia from ascaris lumbricoides, 258

G.

Gall bladder, dropsy of, cholecystotomy in, 273
—— stones, fatal intestinal obstruction by, 124
Garnett, abnormal adhesion of funis to placenta, 73
Gastritis, phlegmonous, 266
Gastro-enteritis in children, chloral in, 542
Gastrotomy in extra-uterine pregnancy, 283
Georgia Medical Association's Transactions, review of, 218
Gerhardt, pleuritic effusions and phthisis, 539
Gillette, laparo-elytrotomy, 566
Glaucoma, sclerotomy in, 280
Glax, phlegmonous gastritis, 266
Goitre, exophthalmic, 493
Goodell, pregnancy in uterus bicornis, 567
Gout, salicylic acid in, 490
Gowers, Medical Ophthalmoscopy, review of, 221
——, Pseudo-Hypertrophic Muscular Paralysis, review of, 498
Greenwaldt, intra-uterine therapeutics in puerperal state, 285
Gross, Oration on Ephraim McDowell, review of, 251

H.

Harris, Porro operation, 335
——, spontaneous reposition of inverted womb, 141
Hayem, development of coloured blood-corpuscles, 254
Head, regional temperature of, 514
Health Primers, review of, 247
—— Reports, review of, 516
Heart, congenital abnormality of, causing cyanosis, 159
—— diseases associated with scarlatina and measles, 265
—— movements, interrupted respiration from, 264
Heath, popliteal aneurism treated by Esmarch's bandage, 562
——, subclavian aneurism treated by amputation at shoulder, 559
——, Surgical Diagnosis, review of, 225
Hemiglossitis, 260
Hemorrhage, accidental, from abnormal adhesion of funis to placenta, 73
Hemorrhoids, ergotin in, 557
Hermil, diaphragmatic pleurisy, 539
Hernia, strangulated, 471
Herpes zoster, treatment of, 545
Heyl, metastatic tenonitis in diphtheria, 429
Hindenlang, paracentesis pericardii, 480
Hoff, typho-malarial fever, mountainous, 38
Hofmann and Ultzmann, Examination of Urine, review of, 236
Holden's Dissections, review of, 246
Hypogastric artery, aneurism of, 561

I.

Intestinal obstruction by gall stones, fatal, 124
Iritis spongiosa, 153

Iron, subcarbonate of, an antidote to arsenic, 80
——, chloride of, poisoning by, 569

J.

Jacobi, removal of uterine fibroid by Thomas's scoop, 422
James, Sore Throat, review of, 521
Javal, physiology of reading, 531

K.

Kansas State Medical Society's Transactions, review of, 216
Kentucky State Board of Health Report, review of, 517
Keyes, litholapaxy, 277, 369
Kidney, extirpation of, 275, 555
——, abscess of, 551
King, Statistics of Placenta Prævia, review of, 224
Kjellberg, gastro-enteritis in children, 542

L.

Laborde, treatment of hepatic colic, 543
Labour, difficult, from distension of fœtal bladder, 281
——, ——, —— shortness of pedicle after ovariotomy, 394
Lange, My Experience in the Turko-Servian War, review of, 500
——, extirpation of larynx, 546
Langenbeck, extirpation of pharynx, 548
Laparo-elytrotomy, 566
Larynx, extirpation of, 546
Leale, subcarbonate of iron an antidote in arsenical poisoning, 80
Le Dentu, non-syphilitic diffuse periostitis, 558
Lefferts, extirpation of larynx, 546
Leishman, System of Midwifery, review of, 237
Lereboullet, interrupted respiration, 264
Leucocythæmia, treatment of, 535
Lidell, fractures of cranial bones, 91
Litholapaxy, 130, 277, 369
Lombard, researches on regional temperature of the head, 514
Louisiana Board of Health Report, review of, 519

M.

Mangiagalli, Porro operation, 282
Markoe, through drainage in treatment of wounds, 305
Martin, sclerotomy, 565
Maxilla, removal of upper, for myxo-sarcoma, 437
Mayet, rectal alimentation, 256
McMunn, Spectroscope in Medicine, review of, 524
Membrana tympani, reproduction of, 144
Meyer, phlyctenular inflammation of vocal cords, 538
Milk, intra-venous injections of, 535
Minnesota Board of Health Report, review of, 519
Mountain fever, 38
Murdock, rest in treatment of eye injuries, 396
Muscular contraction, syphilitic, 399
Mussy, purulent diaphragmatic pleurisy, 263

N.

Nasal catarrh, treatment of chronic, 60
Nashville Board of Health Report, review of, 518
Neck, gunshot wound of, 434
Neilson, removal of upper jaw for myxo-sarcoma, 437
Nephrectomy, 555
Nephrotomy, 551
Nerve stretching for neuralgia of trigeminal, 565
Nervous Diseases, review of recent progress in, 457
Nettleship, Diseases of the Eye, review of, 497
Neuralgia, aconitia in, 536
———— of the trigeminal, nerve-stretching for, 565
Neuroma of Ulnar Nerve, 161
Neurosis, sensitive, in region of median nerve, 259
———— of vagus nerve, 537
New Jersey Medical Society's Transactions, review of, 217
New York State Medical Society's Transactions, review of, 215
Night-sweats in phthisis, 541
Nikitin, sclerotic acid, 255

O.

Odenius, amyloid degeneration, 543
Otitis of hay-fever, 566
Oulmont, aconitia in neuralgia, 536

P.

Paracentesis pericardii, 480
Paralysis, reflex, in ulceration of large intestine, 538
Parker, Hygienic and Medical Reports, review of, 211
Patella, fracture of, treatment of, by wiring, 278
Pedicle, death in labour from shortness of, 394
Periostitis, non-syphilitic, diffuse, 558
Pharmacopœia, Report on Revision of, review of, 484
Pharynx, extirpation of, 548
Pilocarpine, paralyzing action of, on heart, 532
Placenta, abnormal adhesion of funis to, 73
Playfair, Midwifery, review of, 521
Pleurisy, purulent diaphragmatic, 263
——, diaphragmatic, 539
Pleuritic effusions and phthisis, 539
Pneumopericardium, 241
Polypi, nasal, treatment of, 546
Poole, Physiological Therapeutics, review of, 234
Popliteal aneurism treated by Esmarch's bandage, 562
Porro operation, 282, 335
Powell, gunshot wound of neck, 434
Pregnancy, extra-uterine, gastrotomy in, 283, 442
———— in a uterus bicornis, 567
Pseudo-hypertrophic muscular paralysis, 498
Puerperal state, intra-uterine therapeutics in, 285

Pulmonary artery and aorta, communication between, 253
——— ———, congenital atresia of, 363
——— ——— syphilis, 504
Putrefaction, carbolic spray as a preventive of, 83
Puzey, nephrotomy, 551

Q.

Quebracho in dyspnœa, 531
Quintuplets, 280

R.

Ranney, Surgical Diagnosis, review of, 225
Reading, physiology of, 531
Rectal alimentation, 256
Rectum, prolapsus of, ergotin in, 557
Renal inadequacy, 267
Respiration, interrupted, due to movements of the heart, 264
Rest in treatment of eye injuries, 396
Reviews—
  Adams, Dupuytren's Contraction, 219
  Bartholow, Spermatorrhœa, 240
  Bradley, Injuries and Diseases of Lymphatic System, 205
  Bristowe, Practice of Medicine, 252
  Buck, Treatise on Hygiene and Public Health, 180
  Bumstead, Venereal Diseases, 193
  Clarke, Practice of Surgery, 508
  Cornil and Ranvier, Pathological Histology, 475
  Cripps, Cancer of the Rectum, 526
  Croom, Minor Gynecological Operations, 526
  Cutter, Dictionary of German Terms used in Medicine, 529
  Duncan, Diseases of Women, 505
  Fenwick, Practice of Medicine, 529
  Flint, Clinical Medicine, 199
  ———, Manual of Auscultation and Percussion, 530
  Flückiger and Hanbury, Pharmacographia, 510
  Foster, Physiology, 249
  Fothergill, The Heart, 227
  Fox, Photographic Illustrations of Skin Diseases, 220
  Fulton, Physiology, 530
  Gowers, Medical Ophthalmoscopy, 221
  ———, Pseudo-Hypertrophic Muscular Paralysis, 498
  Gross, Oration on Ephraim McDowell, 251
  Harvey, Therapeutics, 514
  Health Primers, 247
  ——— Reports, 516
  Hofmann and Ultzmann, Examination of Urine, 236
  Holden's Dissections, 246
  James, Sore Throat, 521
  King, Statistics of Placenta Prævia, 224
  Lange, My Experience in the Turko-Servian War, 500
  Leishman, System of Midwifery, 237
  Lombard, Researches on Regional Temperature of the Head, 514
Reviews—
  MacMunn, Spectroscope in Medicine, 524
  Medical History of the War of the Rebellion, 163
  Müller, Pneumopericardium, 241
  Nervous Diseases, Recent Progress in, 457
  Nettleship, Diseases of the Eye, 497
  Paracentesis Pericardii, 480
  Parker, Hygienic and Medical Reports, 211
  Pharmacopœia, Report on Revision of, 484
  Playfair, Midwifery, 521
  Poole, Physiological Therapeutics, 234
  Reynolds, System of Medicine, 204, 513
  Richet, Cerebral Convolutions, 506
  Roberts, Paracentesis Pericardii, 480
  ———, Practice of Medicine, 252
  Saint Thomas's Hospital Reports, 469
  Schnitzler, Pulmonary Syphilis, 504
  Sigmund, Treatment of Syphilis, 231
  Smith, Glaucoma, 206
  ———, Operative Surgery, 201
  St. George's Hospital Reports, 489
  State Medical Society's Transactions, 215
  Stillé and Maisch, National Dispensatory, 230
  Surgical Diagnosis, Recent Works on, 225
  Tait, Diseases of Women, 249
  Transactions of American Ophthalmological Society, 501
  ——— ——— Otological Society, 511
  Watson, Eyeball Tension, 238
  Wecker, Surgery of the Eye, 186
  Wilks, Diseases of Nervous System, 214
  Will, Gleet, 248
  Yellow Fever, 447
Reynolds, System of Medicine, review of, 204, 513
Rhode Island Medical Society's Transactions, review of, 218
——— State Board of Health Report, review of, 516
Ribs, resection of, in empyema, 550
Richet, Cerebral Convolutions, review of, 506
Richey, reproduction of membrana tympani, 144
Ringer, relative paralyzing action of atropia and pilocarpine on the heart, 532
Risley, effects of atropia and duboisia on eye, 410
Roberts, Paracentesis Pericardii, review of, 480
———, Practice of Medicine, review of, 252
Rose, treatment of fracture of patella, 278
Rosenbach, neurosis of vagus nerve, 537

S.

Saint Thomas's Hospital Reports, review of, 469
Sansom, heart diseases associated with scarlatina and measles, 265

Schiff, cysticercus cellulosæ affecting the skin, 544
Schnitzler, Pulmonary Syphilis, review of, 504
Schücking, oöphorectomy, 286
Schüller, treatment of fractures, 277
Schwarz, puerperal cystitis, 568
Sclerotic acid, action of, 255
Sclerotomy in different forms of glaucoma, 280
——————, new method for performing, 565
Sexton, ear affections arising from diseases of the teeth, 17
Sigmund, treatment of syphilis, 231, 257
Simmons, chloral and camphor in toxic and therapeutic doses, 89
——————, epileptiform convulsion from glandulo-preputial adhesion, 444
Smith, Glaucoma, review of, 206
———, Operative Surgery, review of, 201
South Carolina Medical Association's Transactions, review of, 216
St. George's Hospital Reports, review of, 489
Stifel, congenital atresia of pulmonary artery, 363
Stillé and Maisch, National Dispensatory, review of, 230
Stimson, carbolic spray as a preventive of putrefaction, 83
Streets, croupous bronchitis, 148
Subclavian aneurism treated by amputation at shoulder joint, 559
Syphilis, treatment of, 231, 257

T.

Tabes dorsalis, etiology of, 259
Tait, cholecystotomy, 273
——, Diseases of Women, review of, 249
——, gastrotomy in extra-uterine pregnancy, 283
Tapret, tubercle of urinary organs, 276
Teeth, ear affections arising from diseases of, 17
Temporal bone, pathology of, 511
Tenonitis, metastatic, in diphtheria, 429
Tetanus from foreign body in conjunctival sac, 566
Thomas, removal of large interstitial uterine fibroid, 405
Through drainage in treatment of wounds, 305
Trephining for traumatic epilepsy, 269
Tubercle of urinary organs, 276
Tuberculosis, articular, 557
Typho-malarial fever of the Rocky Mountain region, 38
Tyson, traumatic aneurism of scalp, 269

U.

Ullmann, benzoate of soda, 254
Uretero-uterine fistula, 275
Urticaria, salicylate of soda for, 268
Uterus bicornis, pregnancy in, mistaken for extra-uterine fœtation, 567
———, fibroid of, absorbed under use of ergot, 436
———, ——————, interstitial, removal of large, 405, 422
———, inverted, spontaneous reposition of, 139
———, neck of, myxoma enchondromatodes arborescens, 569

V.

Vagus nerve, neurosis of, 537
Van Harlingen, syphilitic muscular contraction, 399
Vidal, treatment of herpes zoster, 545
Vocal cords, phlyctenular inflammation of, 538
Volkmann, quintuplets, 281

W.

Warlomont, enervation of eyeball, 565
Warty growths, 492
Watson, Eyeball Tension, review of, 238
Wecker, sclerotomy in glaucoma, 280
——————, Surgery of the Eye, review of, 186
Weir, litholapaxy, 130
West, trephining for traumatic epilepsy, 269
Wilks, Diseases of Nervous System, review of, 214
Will, Causes and Treatment of Gleet, review of, 248
Winslow, ten consecutive breech presentations, 444
Woodbury, fatal intestinal obstruction by gall stones, 124
Woodward, Medical History of the War of the Rebellion, review of, 163
——————, typho-malarial fever, mountainous, 59

Y.

Yellow fever, clinical study of, 447
Young, extra-uterine pregnancy, gastrotomy, 442

Z.

Zweifel, extirpation of kidney, 275

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662 -4 (89)

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